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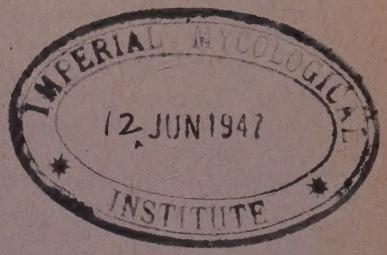

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The Editor will be glad to receive publications relating to Veterinary Science and cognate subjects in order that they may be dealt with in the *Veterinary Bulletin*.

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Books for Review.

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DISEASES CAUSED BY BACTERIA AND FUNGI

BURKE, V., SWARTZ, H., & KLISE, K. S. (1943.) **Morphological life cycle of a staphylococcus-like organism and modification of the cycle.**—*J. Bact.* **45.** 415–430. **917**

The authors describe an organism from their collection of strains of *Staph. aureus* which when grown on water agar or starvation medium produced rod forms.

Observations at hourly intervals on a series of nutrient agar slants, showed that when first sown the organism was a coccus ; after two hours rods began to appear and after five hours few cocci could be detected. Reversion to the coccal form was practically complete at the end of 12 hours. Thereafter a second cycle started, but this was not so well marked, cocci and rods appearing together in the cultures. The coccal form again predominated at 24 hours.

The change from coccus to rod was observed in hanging drop cultures.

The rod forms in young cultures on agar were motile and usually Gram-negative. Gram-positive forms and Gram-negative forms containing Gram-positive areas also occurred.

The organism was heavily seeded into U-tubes through which a continual flow of broth passed at a rate which renewed the medium in the tubes once every hour. Under these conditions the organism went through repeated coccus-rod-coccus cycles, each lasting about 15 hours.

When the organism was grown on a medium containing accumulated metabolic products, obtained either by sterilizing medium on which the organism had already been grown or by growing for several weeks in broth, rods were obtained which did not revert to cocci on sub-cultivation. The characters of this stabilized organism agreed closely with the description of *Flavobacterium caudatum* in BERGEY'S *Manual of Determinative Bacteriology*. Agglutination and absorption tests revealed that the parent coccus and the stabilized rod were antigenically identical.

—ANGUS FOGGIE.

EVANS, A. C. (1946.) **The instability of the agglutinative reaction in beta hemolytic streptococci of Group A.**—*J. infect. Dis.* **78.** 204–215. **918**

E. gives detailed evidence that Group A streptococci can change their agglutinative type either spontaneously (one case reported) or after passage through animals. She suggests that this may be the explanation of change of serological type occurring in patients nursed in multiple bed wards. In the course of cross-protection studies, 56 strains were passed through series of mice and 11 of them changed their agglutinative type after a varying number of passages, five changing completely from one type to another.

In these tests, the criterion that the strains had in fact changed their agglutinative types and had not been confused with one another in the course of the passages was that the immunological characters of the strains remained constant in all cases and thus identified each strain. In most cases where a change of type occurred it was of the same order, *e.g.*, Type 3 always changed to Type 13, but an instance is given where a strain of Type 6 changed to Type 19 in E.'s experiment and to Type 23 in another laboratory.

These experimental results are applied to epidemics and evidence is produced to show that where two distinct types of Group A streptococci are discovered in a single outbreak, there is probably a transformation of type in the course of animal passage as the epidemic spreads.—C. D. W.

I. NIVEN, C. F., Jr., KIZIUTA, Z., & WHITE, J. C. (1946.) **Synthesis of a polysaccharide from sucrose by *Streptococcus* S.B.E.**—*J. Bact.* **51.** 711–716. **919**

II. WHITE, J. C., & NIVEN, C. F., Jr. (1946.) ***Streptococcus* S.B.E. : A streptococcus associated with subacute bacterial endocarditis.**—*Ibid.* 717–722. **920**

III. WASHBURN, M. R., WHITE, J. C., & NIVEN, C. F., Jr. (1946.) ***Streptococcus* S.B.E. : Immunological characteristics.** — *Ibid.* 723–729. **921**

I. The authors suggest that the capacity of

streptococcus S.B.E. to synthesize polysaccharide may be useful in identifying the causal organisms in bacterial endocarditis, where prompt identification is essential.

On solid media, polysaccharide synthesization was not marked but in 5% sucrose broth, after three days' incubation, there was a marked increase of viscosity in 31 out of 34 strains, this viscosity being due to the extent of formation of the polysaccharides. Other types of streptococci may possess this property but can be differentiated easily by other means.

The physical and chemical properties of the polysaccharide are discussed and it is tentatively concluded to be a dextran.

II. The organism described is a streptococcus of the *viridans* type, with a unique combination of physiological characteristics, including the ability to synthesize large amounts of polysaccharide in glucose broth, to hydrolyse arginine and to ferment inulin, but not raffinose. The authors suggest that it be named *Str. sanguis.*

III. Forty-two strains of the streptococcus described in II were studied.

Five cultures were found which gave positive precipitin reactions with both Type I and Type II antisera. A serum prepared against one of these strains reacted with all 42 cultures. This appeared to be due to the presence of antigens of both types in the cells of these strains, rather than to the presence of a group-specific antigen. There appeared to be a number of agglutinating antigens in the individual strains. The aggln. test was not, however, suitable for the identification of this organism.—C. D. Wilson.

Rosenow, E. C. (1945.) **Studies on the etiologic relation of streptococci to acute epidemic respiratory infections.**—*Amer. J. clin. Path.* **15.** 319–333. **922**

A detailed study was made of the more important characteristics of streptococci isolated from the naso-pharynx and blood of human cases of epidemic influenza, broncho-pneumonia, the common cold and similar acute respiratory infections. The great majority of cases yielded α (green-pigment) streptococci usually in pure culture; other organisms occurring to a lesser degree were γ streptococci, β streptococci and occasionally, at the onset of some epidemics, *H. influenzae.* A very large number of strains of the above organisms isolated from clinical cases and also from healthy persons were tested for their pathogenicity, cataphoretic velocity and for the specificity of their agglutinogens and precipitinogens. R. successfully stored the organisms so that they retained the properties they had when first isolated by keeping a dense suspension in the refrigerator in a mixture of two parts pure glycerin and one part 25% sodium chloride solution. Glucose brain-broth medium is recommended for the primary isolation of streptococci. Each type of test served to distinguish between the strains from active infective conditions and those existing as saphrophytes in healthy persons. Those in the former category were the more pathogenic in several species of laboratory animal by several different routes of inoculation. R. also showed that in agglutination and precipitin tests, the strains from cases of acute infection reacted specifically with antisera which had been prepared from strains having a similar origin. It is claimed that such strains make superior vaccines and that they are an important factor in certain cases of respiratory infection.—J. Keppie.

Ehrlich. (1944.) Gesundheitsüberwachung der Milchtierbestände durch planmässige Einzelgemelkuntersuchungen. **[Supervision of the health of dairy herds by systematic individual milk testing.]**—*Dtsch. tierärztl. Wschr./Tierärztl. Rdsch.* **52/50.** 44–46. **923**

In 1939, with the outbreak of war, the following scheme was put into operation for the detection of TB., brucellosis and mastitis. Individual milk samples were examined every six months, microscopically for TB. and mastitis and serologically for TB. (complement-fixation test) and brucellosis; in doubtful cases, biological tests for TB. of the udder were also carried out. The total annual cost, defrayed by the owner, was 2·40 RM. Samples were sent by the owner, together with a description of abnormalities seen in the individual samples or quarters supplying the samples. The laboratory technique is outlined.

The numbers of cows enrolled in this scheme in Pomerania in 1940, '41 and '42 were 53,884, 66,611 and 60,391 respectively and 65, 95 and 80 cases of TB. of the udder were detected in these three periods. Detailed figures for brucellosis and mastitis are not given, but it is considered that the work was well worth while as a contribution to the control of bovine TB. in wartime, when most of the veterinary practitioners were away on army duty.—J. E.

Sordelli, A., Manzullo, A., Viola, R. N., & Ferrari, J. (1944.) La dualidad de la inmunidad antidiftérica. Contribución a su conocimiento —estudio experimental. **[Duality of diphtheria immunity—an experimental study.]**—*Rev. Inst. bact., B. Aires.* **12.** 494–526. **924**

Immunization against *Corynebact. diphtheriae* should be both antitoxic and antibacterial, since some strains contain one or several somatic antigens, apart from toxin, which are detrimental to the animal body. Antibacterial immunity, whether active or passive, does not protect g. pigs

against infection; when combined with antitoxic immunity, it does, however, confer protection.
—I. W. JENNINGS.

WAGLEY, P. F., & STEENKEN, W., Jr. (1946.) **Virulence of tubercle bacilli. *In vitro* testing by the use of diphtheria antitoxin.**—*Amer. Rev. Tuberc.* **53.** 496–499. [Spanish summary.] **925**

The observation of SCHAIN [see *V. B.* **15.** 3], on the capacity of media containing diphtheria antitoxin to differentiate the degree of virulence of strains of *M. tuberculosis*, has not been confirmed. The medium used was a potato agar mixed with fresh human blood or human blood plus various concentrations of diphtheria antitoxin. Four virulent and five avirulent strains [presumably human] were examined: each was seeded on 13 different slants, each set containing 12, 24, 48, etc., units of antitoxin respectively. The amounts necessary to inhibit the growth of the virulent strains were not significantly different from those which arrested the non-virulent strains and varied from 36 to 84 units.—R. E. GLOVER.

BARBER, M., NELLEN, M., & ZOOB, M. (1946.) **Erysipeloid of Rosenbach. Response to penicillin.**—*Lancet.* **250.** 125–127. **926**

Five cases of *E. rhusiopathiae* infection of human beings are noted; in each case diagnosis was confirmed bacteriologically by incubating a portion of the skin from the edge of the erysipeloid lesion in glucose broth, other methods being found ineffective. In one case, infection was through a wound caused by a splinter of beef bone, in another through a cut while handling calves' livers and in two from scratches with rabbit bones; one case was of unknown origin. Two cases were recovering spontaneously when first seen and were not treated. The other three were treated with penicillin and the lesion disappeared in 48 hours. The only dosage recorded was 20,000 units given intramuscularly every three hours for 2–3 days [number of doses not given] to the beef bone case; recovery was followed by desquamation.

Attention is called to the wide distribution of the organism amongst animals.—R. MACGREGOR.

DE MACEDO, L. R. T. (1944.) Profilaxia de um surto de pasteurelose em "Meleagris gallopavo". [**An outbreak of *Pasteurella aviseptica* infection in turkeys.**]—*Biol. med., Rio de J.* **7.** No. 15. 27–33. [English summary.] **927**

An outbreak of pasteurellosis in turkeys in Brazil resulting in the death of 300 birds was ascribed to infection introduced by carrier fowls. The outbreak was quelled by the simultaneous use of an antiserum, prepared by the method of Wassermann and Ostertag, and a fowl cholera vaccine, by the destruction of carcasses and by thorough disinfection of the premises. No further deaths occurred in 1,100 in-contact turkeys and in 1,200 birds which were also treated on neighbouring premises, to which it was thought the disease might extend.—U. F. RICHARDSON.

LESBOUYRIES. (1942.) Protéose du lapin. [*Proteus vulgaris* **infection in rabbits.**]—*Bull. Acad. vét. Fr.* **15.** 278–280. **928**

P. vulgaris was isolated from a rabbit with a suppurating lesion of the skin and subcutaneous tissues. The symptoms in the rabbit and the cultural characters of the organism are described.

Subcutaneous inoculation of a 24-hour culture into one rabbit and one white mouse provoked a fatal septicaemia.—M. C.

LESBOUYRIES, G. (1945.) Infection des équidés par *Shigella viscosa*. [*Bacterium equirulis* **infection in horses.**]—*Rec. Méd. vét.* **121.** 10–30. **929**

This article consists of a review of the literature, followed by a detailed description of the organism and a discussion of the salient features of the disease in its various manifestations, such as the septicaemic, nephritic and arthritic forms, the uterine infection and the disease of the newly born.

The discussion of the spread of the organism throughout the body includes a reference to its association with strongylosis. Known methods of treatment are dismissed as ineffective. Prophylaxis, in the case of breeding establishments, is based on vaccination of the pregnant mare, with secondary protection of the foal *via* the colostrum and by blood transfusion from the mother.
—I. W. JENNINGS.

HALBERT, S. P., MUDD, S., & SMOLENS, J. (1946.) **The increased antigenicity of Shigella Paradysenteriae (Flexner) in saline-in-mineral-oil emulsion. Experiments in mice and rabbits.**—*J. Immunol.* **53.** 291–301. **930**

The use of a mineral oil emulsion and falba (lanolin derivative) for the preparation of an antigen from *Bact. flexneri* (killed bacteria or extracts) increases and prolongs the antibody response. A number of experiments in mice and rabbits are described. Increasing the volume of the oily vehicle and using a constant quantity of vaccine did not affect the results within the volume range used; neither did the addition of heat-killed acid-fast bacteria. There appears to be a minimum dosage of vaccine below which the oily vehicle is unable to improve the antibody response. In mice the antigen persisted at the site of inoculation for at least 22 weeks. No increase in response was observed when antigen in saline was inoculated at one site and the oily vehicle at another.—S. J. GILBERT.

MANN, L. S., & SPINKA, I. M. (1946.) **The**

production of typhoid antibodies in rabbits with the use of living typhoid organisms adsorbed on aluminium cream.—*J. Immunol.* **53.** 209–213. **931**

It was found that intramuscular inoculation into rabbits of living typhoid organisms adsorbed on aluminium hydroxide cream was satisfactory for the production of precipitins and agglutinins (H and O).

The article includes two tables comparing the precipitin and agglutinin responses of several rabbits.—A. BUXTON.

SEGHETTI, L. (1946.) **Observations regarding Salmonella Cholerae suis (var. kunzendorf) septicemia in swine.**—*J. Amer. vet. med. Ass.* **109.** 134–137. **932**

S. records observations made on some 400 pigs infected with *S. cholerae-suis*, var. *kunzendorf*, in which there was no concurrent infection with swine fever virus.

Symptoms consisted of a marked rise in temperature, posterior incoordination and weakness. Mortality was not high. A detailed description of P.M. findings is given and S. concludes that macroscopic lesions are indistinguishable from those associated with swine fever.

—A. BUXTON.

BRAGA, A. (1943.) Sobre a aferição do antigeno para a aglutinação rápida na pulorose (Salmonella pullorum). **[Titration of antigen for use in the rapid test for pullorum disease.]**—*Bol. Inst. Vital Brazil.* No. 25. pp. 3–10. [French summary.] **933**

B. describes his methods for growing *S. pullorum* for antigen and for preparing the completed rapid-test antigen. He describes also the usual tests applied to the finished product.

—I. W. JENNINGS.

CROWE, M. (1946.) **A localized outbreak of *Salmonella* food poisoning apparently transmitted by a hen's egg.**—*J. Hyg., Camb.* **44.** 342–345. **934**

An outbreak of *S. typhi-murium* food poisoning involving 23 persons is described. All the evidence suggested that the source of infection was a hen's egg which had been incorporated in a butter substitute.—A. BUXTON.

MALLAM, P. C., & ALHADEFF, R. (1946.) **Salmonella infection in man conveyed by ducks' eggs.**—*Lancet.* **250.** 887–888. **935**

The authors record a case of *S. typhi-murium* infection in man following the consumption of a duck egg. Although it is assumed that the egg was the source of infection, no further investigations were carried out to substantiate this claim. There was no history of disease among the flock of ducks concerned.—A. BUXTON.

RAO, S. B. V. (1946.) **Salmonellosis in ducks at an Army development farm.**—*J. R. Army vet. Cps.* **17.** 107–108. **936**

R. describes an outbreak of disease among ducklings on a farm in India caused by an unidentified salmonella organism. The breeding flock was blood-tested, using an autogenous antigen, and all reactors were destroyed. No further account of the outbreak or of other control measures employed is given.—A. BUXTON.

PAPALEO, L. (1942.) Sulla resistenza della Brucella abortus nelle sabbie litoranee messinesi in rapporto alla pratica delle "sabbiature" degli equini. **[Viability of *Brucella abortus* in sand: transmission of infection to horses through their habit of rolling on the sands of the Messina coast.]**—*Nuova Vet.* **21.** 54–58. **937**

In experiments carried out between February and April, 1942, when environmental temperatures were between 23° and 40°C., P. studied the resistance of *Br. abortus* to exposure to the sun on the beaches of the Messina coast. At a depth of 2 cm., *Br. abortus* lost its viability after four hours' exposure; at a depth of 4 cm. it was lost in 6–8 hours and at a depth of 6 cm. it was lost in eight hours. P. therefore supports the contention of PACCHIONI [*V.B.* **14.** 201] that the habit of horses of rolling in the sand can be a means of spreading *Br. abortus* infection.—H. I. FIELD.

LAURIDSEN, O. (1942.) Bekaempelsen af den smitsomme Kastning. **[Control of bovine brucellosis.]**—*Maanedsskr. Dyrlaeger.* **54.** 15–19. **938**

L. considers that for the control of bovine brucellosis it is necessary that legal measures based on knowledge of the epidemiology of the disease should be brought into operation; that individual voluntary efforts do not achieve sufficient success.—H. C. BENDIXEN.

HOUDINIÈRE, A. (1945.) Le rôle du lait dans la transmission des brucelloses. **[The role of milk in the transmission of brucellosis.]**—*Lait.* **25.** 232–241. **939**

H. gives a brief review of brucellosis in man and animals, with special reference to its occurrence in France and the mode of infection. The spread of the disease to man by milk and cheese is considered, H. being of the opinion that milk is only of secondary importance and that infection is usually caused by contact. Cream cheeses may be a source of danger.—S. J. GILBERT.

LIVE, I., SPERLING, F. G., & STUBBS, E. L. (1946.) **Further studies on the allergic activity of sonic filtrate of Brucella abortus.**—*Vet. Ext. Quart. Univ. Pa.* No. 102. pp. 3–11. **940**

The intracutaneous injection of sonic filtrate

of *Br. abortus* into non-infected cows did not produce positive skin reactions and did not sensitize the animals to subsequent skin tests. Agglutinins were, however, produced, but titres receded to negative in about seven weeks. Some cows which gave positive reactions with sonic filtrate were negative or suspicious to the agglutination test but it remains to be established that these animals were infected.—S. J. GILBERT.

IRWIN, M. R., & BEACH, B. A. (1946.) **Differential bactericidal activity of bovine serum toward strains of Brucella abortus of high and low virulence.**—*J. agric. Res.* **72.** 83–91. **941**

The antibacterial action of a serum or its dilutions was estimated by contrasting the number of colonies growing in tryptose agar controls with those in bacteria and serum mixtures in tryptose agar. Complement from uninfected cattle was also added. An index of bactericidal activity was calculated by subtracting the last bacterial dilution in which growth occurred from the last diln. in which growth occurred in control plates. Fifteen cows which had been vaccinated as adults with strain 19 some 6–18 months previously were used in the tests, when the agglutination titres had diminished to 1 : 100 or less. Two strains were used in the cultural tests, strain 19 and a virulent strain. Strain 19 was more easily destroyed than the virulent strain. The serum of normal animals had some bactericidal activity at dilutions of 1 : 40 or 1 : 80, whilst that of the vaccinated animals had a definite antibacterial activity at dilutions of 1 : 1,280 or higher, even in the almost complete absence of agglutinating antibodies.—S. J. GILBERT.

BRAUN, W. (1946.) **Dissociation in *Brucella abortus* : a demonstration of the rôle of inherent and environmental factors in bacterial variation.**—*J. Bact.* **51.** 327–349. **942**

Inherent factors control the dissociation percentages of groups of brucella derived from single cells. The genetically controlled dissociation indexes can be modified by environmental changes, especially those which affect growth rates and viability. Changes in pH, daily transfers, changes in temperature, differences in available nutrients or reduced oxidation-reduction potentials alter the dissociation index. At a point of population growth the total number of cells becomes steadily greater than the number of viable cells. This population pressure permits the occurrence of variants. Bacterial dissociation is thus interpreted in terms of the spontaneous appearance of variants and their subsequent establishment under the control of the inherent and environmental factors. —S. J. GILBERT.

SOLTYS, M. A. (1946.) **The incidence of sera containing agglutinins for *Br. abortus* among samples submitted for the Wassermann reaction and the Widal test.**—*J. Path. Bact.* **58.** 281–283. **943**

Tests of 1,392 Wassermann sera, received during April, May and June, 1945, at a dilution of 1:20 or higher yielded 3·6–3·7 % positive reactions. A few sera had high titres suggestive of active disease. In Widal sera which contained no agglutinin for enteric organisms and were tested at 1 : 40 or higher the percentage of reactors from year to year varied between 0·9 and 6·3. The majority of the sera had titres which suggested active infection. Observations had been carried out at the Department of Bacteriology, Manchester University, over a period of 16 years and no marked changes had been found in the incidence of positive reactions.—S. J. GILBERT.

SORDELLI, A., MANZULLO, A., VIOLA, R. N., FERRARI, J. P., & DESIMONE, C. (1944.) La participación de las toxinas α-θ en la patogenia y la inmunidad de la infección por *B. perfringens* A. **[Role of α & θ Toxins in pathogenicity and immunity of *Cl. welchii* Type A infection.]**—*Rev. Inst. bact., B. Aires.* **12.** 390–420. **944**

The authors describe in detail how to prepare *Cl. welchii* Type A α toxin free of θ toxin, and θ toxin free of α toxin. Both toxins augment considerably the aggressive powers of *Cl. welchii* Type A. The authors describe also how to produce immunizing sera against each of the toxins and a mixed serum to neutralize both. They have fixed a θ antitoxic unit, which corresponds to the activity of a certain amount of dry test serum kept in the Bacteriological Institute. The unit neutralizes at least 30 mouse M.L.D. Nagler's reaction and red blood cell haemolysis are recommended as excellent for the preliminary titration of α toxin. θ toxin can be measured on the basis of its haemolytic activity. The test toxin should be dried. Intravenous injection of mice is another method. θ antitoxin serum does not protect against infection by washed *Cl. welchii* Type A and α antitoxic serum protects only irregularly. The two sera given together will confer excellent protection. Double active immunity, that is immunity against α and θ toxins, seems to be more effective than anti-α immunity alone, whether against washed cultures or cultures with θ toxin or both α and θ toxins.—I. W. JENNINGS.

SCHULTZER, H. E. (1942.) Über Proteasen des Tetanustoxins und ihre Beziehungen zum Tetanusspasmin. **[Proteases of tetanus toxin and their relation to tetanus spasmin.]**—*Hoppe-Seyl. Z.* **274.** 157–174. **945**

Although no relation exists between tetanus

spasmin found in infected wounds and tetanus lysin occurring in culture filtrates, it is not known whether an accompanying enzyme at the site of infection is concerned with the onset of convulsion symptoms. Spasmin is considered to be a proteose polypeptide.

A gelatin-splitting protease is known which is derived from the proteolytic ferments of the tetanus bacillus. S. prepared this gelatin-splitting ferment from concentrated bacteria-free crude toxin in order to study its proteolytic properties. The relation between the various proteases and tetanus spasmin is discussed. The experimental work is described and the results are given in 12 detailed tables.—E. M. J.

WETZEL, R., & ELKSNITIS, W. (1943.) Die Stachybotryotoxikose der Pferde. **[Stachybotryotoxicosis in horses.]**—*Dtsch. tierärztl. Wschr./Tierärztl. Rdsch.* **51/49.** 319–320. [See also *V. B.* **12.** 577; **13.** 162 and **15.** 406.] **946**

Stachybotryotoxicosis is a disease of horses, possibly also of dogs and man, which is caused by *Stachybotrys alternans*, a fungus of grain and herbage crops. It has only been observed in Russia, particularly in the Ukraine, and has been recognized as a clinical entity since 1931 or 1932. Now that its nature is understood it has been possible to take steps for its control and the incidence has diminished.

The organism belongs to the fungi imperfecta, is a saprophyte and obligatory aerobe and lives on dead plant tissue (cellulose); its growth is favoured by moisture and warmth. It thrives on wet straw or hay, and is thus a consequence of bad farming technique, or bad climate or storage conditions. The spores are extremely resistant.

Horses eating infected hay or straw become affected in two forms. The more usual form of stachybotryotoxicosis appears as a disease of the skin and mucous membrane of the lips and cheeks, palate and gums, with inflammation passing into superficial necrosis (ulceration). Deep crevices are formed in the skin and become covered by grey scales and the lips are thickened, which causes a characteristic enlargement of the mouth; feeding becomes more or less painful. The disease may extend to the nostrils and eyes and the submaxillary lymph nodes may become swollen. In severe cases death may occur. There is no fever. Recovery after the removal of infected fodder is fairly prompt (8–14 days), but if exposure is intense and prolonged, general illness supervenes, with anorexia, dullness, gastro-intestinal catarrh and fever. Severe changes occur in the blood, with thrombocytopenia, leucopenia, granulocytopenia and delayed clotting time.

The less usual form of the disease is acute with very frequent pulse, high fever, petechiae in the mucous membranes, dypsnoea and cyanosis from pulmonary oedema and varied nervous disorders. There is leucocytosis and death occurs within 10–24 hours. The findings P.M. include petechiae and larger haemorrhages in the mucous membranes, under the serous membranes and in the subcutaneous and muscular tissues. Necrotic foci without any marginal inflammatory reaction are present in and around the mouth and digestive tract. The lymph nodes are swollen and the lungs oedematous. The parenchymatous organs are practically unchanged.

The disease appears at harvest time and in a few days half of the farm horses may be affected. As winter feeding continues the disease spreads, continuing perhaps for 3–4 months. Deaths occur mostly at the end of the winter period. Horses of all ages and both sexes are equally susceptible. The disease can be checked by elimination of the mouldy fodder and recovery is aided by symptomatic treatment.

[It is not stated whether the lesions in animals are caused by actual infection by the fungus, or by contact with irritant matter emanating from it.]—J. E.

See also absts. **952** (ingestion of bacteria by protozoa), **960** (bacteria and equine encephalomyelitis), **964** (ovine pneumonia) **1000** (calf scours), **1034** (chemoprophylaxis), **1036-1042** (bactericidal and bacteriostatic substances), **1047** (chemotherapy of anthrax), **1048, 1049** (T.B. chemotherapy), **1051** (gas gangrene), **1075** (Johne's disease and pastures), **1080,** (identification of *Clostridium* spp.), **1081** (anthrax diagnosis), **1086** (caprine pleuropneumonia), **1087-1089** (bovine contagious pleuropneumonia), **1091** (anthrax, TB., brucellosis, clostridial infections), **1046** (sulphanilamide treatment).

DISEASES CAUSED BY PROTOZOAN PARASITES

DA SILVA LEITÃO, J. L. (1944.) Tricomoniase bovina. **[Trichomoniasis in cattle.]**—*Rev. Med. vet., Lisboa.* **39.** 271–282. **947**

Trichomonas foetus was recovered from uterine discharge in four out of six cows and from two out of four cows slaughtered and condemned for septic metritis. The organism has not yet attracted much attention in Portugal, but these cases, taken in conjunction with work in other countries indicate its probable importance. A detailed description of its effects in female and male is given, together with instructions for the collection and examination of specimens. Non-pathogenic but morphologically indistinguishable forms occur, so that details of history and symptoms should accompany each specimen.

—R. MACGREGOR.

HAMMOND, D. M., BOWMAN, G. W., DAVIS, L. R., & SIMMS, B. T. (1946.) **The endogenous phase of the life cycle of *Eimeria bovis*.**—*J. Parasit.* **32.** 409–427. **948**

Fifty-one calves were used in this investigation of the life-history of *Eimeria bovis*. Forty-nine calves were fed sporulated oocysts. Two received inoculations of schizonts and merozoites directly into the intestine or into a Thiry's fistula. Enterectomies were carried out in association with the experimental infections and calves were killed at intervals of 15 hours to 30 days later and examined for stages of the parasite. Sporozoites were found in the lower small intestine in calves killed 15, 17, 18, 30 and 46 hours after inoculation. Young schizonts found in calves killed five days after inoculation were sporozoite-like in nuclear structure and in the presence of two extranuclear bodies. Schizonts were found in the posterior half of the small intestine and occurred in the cells in the lumina of the central lacteals, or in their walls. The nucleus of the schizont divides repeatedly and in approximately half-grown schizonts the nuclei come to lie on the periphery of small spheres. The merozoites are developed radially around these spheres. The large schizonts have sometimes been mistaken for *Globidium* or *Gastrocystis*. Mature schizonts were present in greatest numbers 16–18 days after inoculation. In size they averaged 281 × 203 μ and contained an average of 120,000 merozoites. The authors recognized only one generation of schizonts. When schizonts and merozoites were injected into the Thiry's fistula or into the ileum, discharge of oocysts occurred 4–5 days later. The sexual stages of the parasite are limited to the caecum and colon and were found there 17 days after inoculation. Symptoms and pathological changes were directly associated with the sexual phases. Oocysts were discharged on the 18th–20th day after inoculation.—C. HORTON SMITH.

STAUBER, L. A., & VAN DYKE, H. B. (1945.) **Malarial infections in the duck embryo.**—*Proc. Soc. exp. Biol., N.Y.* **58.** 125–126. **949**

Fatal infections with a high level of parasitaemia were produced in 6–11 days by intra-embryonic inoculation of duck embryos with the 3 T strain of *Plasmodium cathemerium*. Variable results were obtained with *P. lophurae*. Both species can develop at either 37°C. or 40°C. Duck embryos were found to survive the intra-embryonic inoculation of ground organs of malaria-infected mosquitoes if they were incubated at 40°C.—C. HORTON SMITH.

WILMOT-SMITH, J. P. (1946.) **Acute piroplasmosis.**—*J. R. Army vet. Cps.* **17.** 145–147. **950**

Four cases of acute disease in horses in Palestine are recorded, death occurring within 24 hours of the onset of symptoms characterized by fever and a serous discharge from the nostrils. In two cases the discharge was copious and frothy, simulating that of African horse sickness. Sub-inoculation of material preserved in 50% glycerin in the refrigerator for three weeks failed to transmit horse sickness. The principal lesions were oedema of the lungs, and serous exudation into the pleural cavity. In one case infection with both *Babesia equi* and *B. caballi* was demonstrated. Nine other cases of piroplasmosis were detected, and successfully treated with acaprin.—U. F. R.

JONES, T. C. (1946.) **Canine leptospirosis. Diagnostic technique.**—*Vet. Student, Iowa.* **8.** 216–218. **951**

The necessity for early and accurate diagnosis of canine leptospirosis is urged in view of its transmissibility to man. The disease should be suspected if a dog has symptoms of gastro-enteritis with acute collapse and fever, but a large number of dogs recover clinically while continuing to carry the organisms in the kidneys.

As a diagnostic test the macroscopic agglutination test is recommended and described. No agglutinins are present in the serum in the early stages of the disease, and a second test should be made 3–5 days after the first, an increased titre indicating infection even when the titres are comparatively low.

Cultural methods of diagnosis should also be used, the most suitable medium being Fletcher's broth. In the later stages of infection leptospira do not occur in the blood, but may be isolated from the urine.

The hamster is susceptible to both *L. canicola* and *L. icterohaemorrhagiae*, whilst the g. pig is susceptible only to *L. icterohaemorrhagiae*. The lesions in acute cases are stated to resemble those of other acute septicaemias, the kidneys showing degenerative changes in the tubules and inflammation of the interstitial tissue. In asymptomatic, or long-standing cases, the kidneys show grey or yellowish masses in the cortex with scattered haemorrhages, and streaks of fibrous tissue radiating from the renal pelvis. The microscopic picture in such cases is interstitial nephritis, the interstitial tissue containing large numbers of lymphocytes, monocytes and plasma cells. Diagnosis is based on the identification of leptospira in silver-impregnated sections, the organisms occurring in the tubular epithelium, or occasionally free in the lumen.—U. F. RICHARDSON.

SINGH, B. N. (1945.) **The selection of bacterial food by soil amoebae, and the toxic effects of bacterial pigments and other products on soil**

protozoa.—*Brit. J. exp. Path.* **26.** 316–325. **952**

Interactions between micro-organisms may be due to (1) competition between organisms with the same requirements and living in the same habitats, (2) one group of organisms preying upon the other or (3) the effect that the by-products of one may have upon the existence of the other. Amoebae are extremely selective in the type of bacteria that they will ingest. Bacteria may be (a) partly or completely edible, (b) completely inedible but otherwise harmless to the protozoa or (c) definitely toxic to protozoa.

In a survey of 103 miscellaneous bacteria mostly from soil, S. found that those with red, violet, blue, green, or fluorescent pigment were inedible to the protozoa. The metabolic products of *Pseudomonas pyocyanea* are toxic to soil amoebae, flagellates and ciliates. High concentrations of the calcium salt of penicillin are not toxic to protozoa, but penicillic acid and citrinin are toxic up to 1 : 1,500. Amoebae may be of considerable importance in causing qualitative changes in the bacterial population of the soil and S. is extending his studies to this question.—C. Horton Smith.

See also absts. **1052** (leptospirosis), **1062** (dourine), **1087-1089** (surra), **1058** (dourine and piroplasmosis).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

Hoffstadt, R. E., & Tripi, H. B. (1946.) **A study of the survival of certain strains of viruses after lyophilization and prolonged storage.**—*J. infect. Dis.* **78.** 183–189. **953**

Freeze-dried serum suspensions of viruses stored *in vacuo* for approximately three years at 4°C. were tested for survival with the following results :– strains of vaccinia, herpes simplex, laryngotracheitis and Rous sarcoma were still active. The OA strain of Shope's fibroma virus failed to infect three rabbits and only a proportion of the samples tested of infectious myxoma virus were viable.—W. M. Henderson.

Viscontini, V., & Marchat. (1946.) Syndrome clinique observé sur une chienne et rapporté à la maladie d'Aujeszky. [**Aujeszky's disease in a bitch.**]—*Rev. Méd. vét., Lyon et Toulouse.* **97.** 109–111. **954**

Intense pruritus of the skin of a bitch that did not respond to the usual treatment for eczema was diagnosed on clinical grounds as Aujeszky's disease. Recovery took place, which was attributed to administration of sulphathiazole. One rabbit was used in an unsuccessful attempt to isolate the virus.—W. M. Henderson.

Moreira, N. M. (1944.) Serviço anti-rabico humano do Instituto Vital Brazil. (1920 à 1943.) [**Antirabies service at the Vital Brazil Instituto 1920-43.**]—*Bol. Inst. Vital Brazil.* No. 26. pp. 48–62. [English summary.] **955**

Statistics are given of human antirabies treatment in Brazil during 1920–43. From 1920 to 1931 the Pasteurian vaccine was used, two deaths occurring amongst 4,294 people treated, of whom 2,294 had been bitten by dogs known to be rabid. In 1932 Pasteur's method was abandoned in favour of Semple's vaccine, in view of its better keeping qualities which allowed decentralization and the establishment of centres for treatment in the provinces. 12,398 persons were treated with this vaccine, 3,997 having been bitten by dogs known to be rabid : four deaths amongst these persons occurred, but two of these are not accepted as due to failure of the treatment. The factors governing the success of treatment are fully discussed, reference being made to the opinions of workers in other countries.—U. F. R.

Braga, A. (1944.) Sôbre a vacinação antirábica dos animais domésticos. [**Rabies vaccination of domestic animals.**]—*Bol. Inst. Vital Brazil.* No. 27. pp. 8–46. **956**

B. commences his thesis with a discussion of the epizoology of rabies in South America. The problems are much the same as in other countries, but complicated by the presence of the vampire bat vectors, particularly *Desmodus rotundus*, *D. eucaudata* and *D. rufus*.

B. classifies and discusses the various types of antirabic vaccines, methods of titration and tests for inocuity. The best vaccines are believed to be those treated with chemical agents such as ether, formol, chloroform and phenol. Various theories are submitted to explain the post-vaccinal paralysis and B. describes the differential diagnosis between this condition and rabies. He puts forward a plea for stronger national and international co-operation, in order that uniform methods, fully tested, may be applied throughout the world for the eradication of rabies.—I. W. Jennings.

Downie, A. W. (1946.) **The laboratory diagnosis of smallpox.**—*Mon. Bull. Min. Hlth Emerg. publ. Hlth Lab. Serv.* **5.** 114–116. **957**

The methods available for the diagnosis in the laboratory of smallpox are described. They consist of the microscopic examination of smears for inclusion bodies, inoculation experiments on monkeys, the cultivation on the chorio-allantoic membrane of developing hens' eggs, precipitation or complement fixation tests on vesicle fluid and

the detection of antibody in the blood serum by a c.-f. test.

These methods are briefly discussed and instructions given regarding methods of collecting and forwarding specimens for laboratory examination.—M. C.

BURNET, F. M. (1946.) **Vaccinia haemagglutinin.**—*Nature, Lond.* **158.** 119–120. **958**

This is a short review of the work completed and in progress on the haemagglutinins of vaccinia and ectromelia viruses. It includes references to papers in the press showing the similarity between the haemagglutinins of the two viruses (BURNET & BOAKE—*J. Immunol.*); that the vaccinia haemagglutinin can be separated from the virus particles (BURNET & STONE—*Aust. J. exp. Biol. med. Sci.*) and that both haemagglutinins are probably composed of a virus antigen plus a phospholipoid component (STONE, *Aust. J. exp. Biol. med. Sci.*).—W. M. HENDERSON.

MCLEAN, I. W., Jr., BEARD, D., TAYLOR, A. R., SHARP, D. G., & BEARD, J. W. (1945.) **Antibody response of swine to vaccination with formolized swine influenza virus adsorbed on alum.**—*Proc. Soc. exp. Biol., N.Y.* **60.** 358–362. **959**

The antibody response of swine to formolized swine influenza virus adsorbed on alum was essentially the same as the response to the vaccine dispersed in saline solution. The antibody response was measured by the capacity of the antisera to inhibit the virus haemagglutination.

—R. R. A. COOMBS.

CHUNG, S. F. (1946.) **Protective effects of bacteria on western equine encephalomyelitis.**—*J. infect. Dis.* **78.** 216–222. **960**

The survival of Western E.E. virus was studied after 48 hours' incubation at 37°C. in a bacteria-free medium and in a medium containing a growing culture of a *B. subtilis*-like organism. It was found that the rate of inactivation was reduced in the presence of the growing bacteria so much so that after 48 hours the virus content of this medium was approximately a thousandfold greater than the sterile medium. Other experiments showed that the same protective effect was produced in sterile medium sealed with a layer of vaseline and C. concludes that the better survival in the presence of multiplying bacteria can probably be accounted for by the production of anaerobic conditions.—W. M. HENDERSON.

CARNEIRO, V. (1945.) Conservação do valor antigenico das vacinas de encefalomielite infecciosa do cavalo. [**Preservation of the antigenic value of equine encephalomyelitis vaccines.**]—*Arq. Inst. biol., S. Paulo.* **16.** 343–352. [Abst. from English summary.] **961**

When E.E. vaccines were kept in a refrigerator they retained their antigenic value for up to 50 months, as shown by immunity tests performed by intracerebral inoculation into g. pigs. Results varied with different lots of vaccines, however, and factors which may alter their antigenic value are discussed.

LABZOFFSKY, N. A. (1946.) **Effect of time of contact at 37°C. and hydrogen ion concentration on the degree of neutralization of equine encephalomyelitis virus (eastern type) by immune serum.**—*J. infect. Dis.* **79.** 63–68. **962**

In vitro neutralization tests with E.E. virus (Eastern type) and immune serum showed that there was a progressive reduction in the virus titre of unneutralized mixtures with increase in the length of time of incubation at 37°C. About 15–25 hours incubation was necessary for the reaction to become complete, the time required appearing to depend on the quantities of virus and immune serum present. Variation in hydrogen ion concentration of the virus-serum mixtures between pH 5·6 and 8·2 did not influence the degree of neutralization obtained after the mixtures had been held at 37°C. for 24 hours. No evidence of the "dilution phenomenon" was obtained by dilution of the virus-serum mixtures after incubation.—W. M. HENDERSON.

D'APICE, M. (1944.) Considerações sobre o virus do aborto contagioso das eguas. [**The virus of equine abortion.**]—*Bol. Soc. paulista Med. vet.* **6.** 22–28. [English summary.] **963**

The author reviews recent contributions on the subject of virus abortion in the mare. The literature does not provide convincing evidence of the existence of a specific virus disease. Some authors describe the anatomical lesions and particularly the presence of intranuclear inclusion bodies in the liver and lungs of aborted foetuses, but similar structures have been found by other authors in foals carried to term.

In elucidating the cause of abortion in a given case, one must take into consideration not only bacterial causes, but nutritional errors and deficiencies, including avitaminoses, the presence of twin foetuses, traumatism and the influence of febrile diseases such as strangles and influenza.

—I. W. JENNINGS.

MORCOS, Z., ZAKI, O. A., & ZAKI, R. (1946.) **Contagious ovine pneumonia caused by a filtrable virus.**—*Vet. Med.* **41.** 202–204. **964**

The authors survey briefly the literature on caprine and ovine pneumonia and describe the symptoms and lesions in Sudanese sheep affected with a contagious pneumonia said to be due to a filtrable virus. The virus was found in the blood

and internal organs of the affected animals. It was pathogenic for rabbits, but not for g. pigs, white rats, mice or pigeons. Pasteurellae and *Corynebact. pyogenes* were amongst a variety of secondary invaders isolated from the affected lung tissue. Formolized tissue vaccine prepared from liver and spleen gave promising results in immunization.—A. R. JENNINGS.

D'APICE, M. (1944.) A vacina de cristal violeta no combate à peste suina. [**Use of crystal-violet vaccine against swine fever.**]—*Bol. Soc. paulista Med. vet.* **6.** 52–54. [English summary.] **965**

The author reports favourably on the use of crystal violet vaccine in garbage-fed swine, living under rather poor conditions. The immunity to natural S.F. infection appeared to be solid and lasting.

The figures given for 64 outbreaks of the disease are interesting. Twelve thousand animals were vaccinated. Deaths before vaccination amounted to 1,500; during the "negative phase" there were 717 deaths, and 15 days after vaccination there were no deaths.

The author lists the usual conditions necessary for reducing "negative phase" deaths to a minimum.—I. W. JENNINGS.

DOBBERSTEIN, J. (1942.) Histopathologie des Zentralnervensystems bei der Poliomyelitis des Schweines (ansteckende Schweinelähme, Teschener Krankheit). [**The histopathology of the central nervous system in porcine encephalomyelitis (Teschin disease).**]—*Z. InfektKr. Haustiere.* **59.** 54–80. **966**

This detailed histological study is based on 45 natural cases of the disease and 17 cases in which infection was produced experimentally by intranasal inoculation. The experimentally infected pigs were killed 9–107 days after injection of virus. The macroscopic lesions were not striking: they included a muco-purulent rhinitis (acute cases), atrophy of skeletal musculature (chronic cases), hyperaemia of the pia mater (acute cases) and oedema and softening of the brain and spinal cord. The histological picture was one of a non-purulent encephalomyelitis, especially marked in the grey matter of the cord. Comparison of the lesions with those of poliomyelitis in man justifies the use of the name poliomyelitis suum for the disease in the pig. D. discusses the question of the possible relationship of Teschin disease to human poliomyelitis and suggests the need for further work on the possibility of infecting pigs with the human virus. Against the view that the two diseases are caused by the same virus is the fact that Teschin disease was first recognized only in 1929 and that it has not been recorded in some countries where infantile poliomyelitis occurs. There remains the possibility that the human virus may have become adapted for the pig during recent years. In this connexion it is of interest that the disease in the pig has apparently assumed epizootic characters only quite recently.

The earliest histological change in Teschin disease is a leptomeningitis: this lesion can be found in animals killed ten days after infection and having no clinical symptoms. In chronic cases (53–107 days) cellular infiltration may be no longer present. In acute cases the perivascular lymph spaces of the c.n.s. are packed with lymphocytes and histiocytes which are largely replaced by plasma cells when the disease runs a chronic course. Proliferation of the adventitial cells of the vessels occurs in chronic cases. The distribution of the lesions is patchy: they are most frequent in the lumbar cord and in the medulla and cerebellum. Degenerative changes in the motor cells of the ventral horn of the spinal cord are a characteristic feature of the disease. These changes consist of disappearance of the Nissl granules, vacuolization, breakdown of the nucleus and conversion of the cell into a shrivelled non-nucleated irregular body which becomes surrounded by phagocytic cells. Foci of glial proliferation occur within ten days of infection and consist mainly of microglial elements. The foci occur in the region of vessels with perivascular infiltration and to some extent also in otherwise normal nervous tissue. In early cases of the disease the central canal of the spinal cord is distended with fluid rich in lymphocytes.—E. G. WHITE.

GREEN, R. G. (1945,) **Distemper and its control in mink.**—*Amer. Fur Breeder.* **18.** No. 4. pp. 8, 11 & 12. **967**

This article is designed primarily for mink ranchers and contains a fairly complete description of the disease in these animals.

Apart from the symptoms of a generalized infection, lesions of the skin are typical of distemper in the mink. About the eighth day of infection a rash is visible on the lower jaw, on the feet and on the abdomen. By the second week, these skin lesions are more marked. The foot pads may be greatly enlarged, with scaly encrustations. The development of the disease varies according to the virulence of the strain of virus. Some strains are more liable than others to give rise to nervous symptoms. The danger of infection from dogs and fur-bearing animals (foxes, racoons, weasels) whether wild or under ranch conditions, is emphasized.

Diagnosis can be made from symptoms and clinical histories and it can be confirmed by laboratory examination. Laboratory diagnosis depends on the demonstration of inclusion bodies

in smears from the cut surface of the lungs or the mucous membrane of the urinary bladder.

The immunization of mink with a formolized tissue vaccine from ferrets is discussed in some detail. The basic vaccination programme recommended is two doses of 2 ml. of vaccine at 7–10 days' interval. This procedure will protect the young mink until the pelting season. The adult breeding stock should receive a " booster " dose of one injection before the commencement of each succeeding breeding season. This recommendation depends on the fact that immunity to distemper in the mink begins to wane in 6–8 months.

In the face of an established outbreak all the mink on the ranch should receive 5–10 ml. of antiserum immediately. This passive protection should be accompanied by a policy of active immunization with three doses of tissue vaccine at five-day intervals. The success of this method will depend on prompt diagnosis followed by immediate passive protection coupled with vaccination.—D. L. HUGHES.

STUBBS, E. L. (1946.) **Newcastle disease in Pennsylvania.**—*Vet. Ext. Quart. Univ. Pa.* No. 103. pp. 3–12. **968**

This article describes the first outbreak of Newcastle disease recorded in Pennsylvania. The differential diagnosis of Newcastle disease, fowl plague, infectious bronchitis, epidemic tremor and infectious laryngotracheitis is described.

—J. D. BLAXLAND.

OLITSKY, P. (1943.) Estudos experimentais sôbre o virus da encefalomielite aviária infecciosa. [**Study of the virus of avian infectious encephalomyelitis.**]—*Bol. Soc. Brasil. Med. vet.* **12.** 256–262. **969**

The virus of avian infectious encephalomyelitis (A.I.E.) was studied in order to determine its relationship, if any, to the virus of equine encephalomyelitis. Since the Eastern type of the E.E. virus is the only one present in New England, where the avian disease prevails, the majority of the comparative tests were carried out with that type.

In the first place, it seems that the common laboratory animals, including Swiss mice, g. pigs, rabbits and the macacus monkey are resistant to intracerebral inoculation of A.I.E. virus, even in large doses. Eastern E.E. virus is infective for many species of animals. Both viruses are pathogenic for fowls, but the course of the experimental disease differs in each case. There is no cross immunity between the two viruses. The A.I.E. virus infects constantly when injected intracerebrally into fowls and persists in the brain tissue for at least 24 days. It is present in the blood during the incubation period of 1–5 days, but is probably not present there after the clinical symptoms appear.

The histopathological features of the experimental disease include degeneration of the neurones of the cerebrum and medulla, perivascular lymphocytic infiltration, more pronounced in the cerebrum and cerebellum than in the medulla and hyperplasia of lymphoid foci in other organs.—I. W. JENNINGS.

SARIAN, J. N, (1940.) L'affinité des ultravirus et la réaction leucocytaire dans les maladies causées par eux. [**The affinity of the ultraviruses and the leucocytic reaction in illnesses caused by them.**]—*Thesis, Lausanne.* pp. 40. **970**

The effect on the white cell count of certain virus diseases of man is discussed. With neurotropic viruses leucocytosis occurs the intensity of which is greatest in the diseases caused by the more strictly neurotropic viruses. In the diseases caused by viscerotropic viruses, leucopenia occurs and here again the intensity is greatest with the more strictly viscerotropic viruses. In the pantropic group the reaction is variable but tends toward a leucopenia. A relative monocytosis is a constant feature.—M. C.

LOIZAGA, N. S., & AVERBACH, S. (1944.) Contribución clinica al estudio de la psitacosis. I. —(Brote epidémico generado por un virus particular). [**Study of psittacosis. I. An outbreak in human beings.**]—*Rev. Inst. bact., B. Aires.* **12.** 332–336. **971**

CHIALVO, R. J., & PARODI, A. S. (1944.) Contribución al estudio de la psitacosis. II.—Empleo de la via intranasal para aislar virus a partir de gárgaras y de esputo. [**Study of psittacosis. II. Isolation of the virus from sputum and throat washings.**]—*Ibid.* 337–346. **972**

VILCHES, A. M., & AVERBACH, S. (1944.) Contribución al estudio de la psitacosis. III.—Epidemiologia de us brote en 1942. [**Studies of psittacosis. III. Epidemiology of an outbreak occurring in 1942.**]—*Ibid.* 347–354. **973**

In October, 1942, cases of psittacosis occurred in five houses in the vicinity of a bird-dealer's shop. Nine persons were affected, five fatally, and two laboratory workers contracted the disease in the course of their investigations; one of these died. The bird-dealer himself did not admit having been ill, but was positive to the complement-fixation test six months later and two of his household were affected, one fatally. No actual epizootic had been observed in the stock but deaths were always common among the smaller birds. The infection is believed to have been brought by some Australian budgerigars (*Melopsit-*

taçus undulatus) and to have been spread by pigeons housed in an adjacent stable and feeding on the sweepings from the shop.

In human beings the organism can be recovered from throat washings on the third day or from the sputum on the seventh day. It can be stored at –76°C. for at least 28 days. Isolation is accomplished by injecting rats intranasally, after anaesthetizing with ether; the virus being recovered from the spleen or lungs. This nasal route is preferable to the intraperitoneal or intracerebral route as these are not always successful unless the virus has been passaged previously through rats.

Search for infected birds in the suspected premises was unsuccessful, but inoculations from the spleens of two other parrots, apparently healthy, were positive.—R. MACGREGOR.

ANON. (1946.) **Homologous serum hepatitis.**—*Lancet.* **250.** 692–693. **974**

This is a review of the new knowledge of homologous serum jaundice and infective hepatitis gained during the war as a result of outbreaks which occurred in troops vaccinated with yellow fever vaccine containing human sera, in persons who had received transfusions of blood and in people inoculated with convalescent plasma from persons recovered from mumps.

It is now accepted that naturally occurring infective hepatitis is caused by a virus and can be transmitted to man by oral administration of such materials as faeces, urine, serum, etc.; it cannot be transmitted by intranasal inoculations of nasopharyngeal washings. In contrast, homologous serum jaundice has only been transmitted by parenteral inoculation of serum or by intranasal inoculation of nasopharyngeal washings. Cross immunity between the two conditions does not occur.

It has not been possible to transmit homologous serum jaundice to experimental animals. No satisfactory method of inactivating the infective agent in serum is yet known.—M. C.

OLITZKI, L., & BUECHLER, E. (1946.) **Studies on the detoxication of the labile rickettsia toxin.**—*Brit. J. exp. Path.* **27.** 220–224. **975**

Experiments are described which show that immunity to the toxin which occurs in filtrates of yolk-sac cultures of *R. prowazeki*, and which causes severe enlargement of the spleen of young rats, can be conferred by the injection of toxin diluted 1 : 10, or by toxin detoxicated by exposure to 0·1% formalin, 0·02% potassium permanganate or 1% sodium bisulphite for 24 hours in the ice box. It was also shown that the toxin is present in the supernatant fluid of centrifuged yolk-sac cultures as well as in filtrates.—U. F. RICHARDSON.

HAMILTON, H. L. (1945.) **Effect of p-aminobenzoic acid on growth of rickettsiae and elementary bodies, with observations on mode of action.**—*Proc. Soc. exp. Biol., N.Y.* **59.** 220–226. **976**

2 mg. of *p*-aminobenzoic acid inoculated into chick embryos inhibited the growth of rickettsiae of the spotted fever group in the following order of magnitude: Rocky Mountain spotted fever, Brasilian spotted fever, Colombian spotted fever, South African tick fever and *fièvre boutonneuse*. The American rickettsiae were inhibited to a greater extent than the African. *p*-Aminobenzoic acid was about twice as effective against Rocky Mountain spotted fever infection as against either epidemic or murine typhus. The growth of the agents of "Q" fever, tsutsugamushi fever, lymphogranuloma venereum or psittacosis was not affected by *p*-aminobenzoic acid. The action of *p*-aminobenzoic acid was highly specific. Its inhibitory properties depend upon the amino and carboxyl groups remaining unchanged and in the para position to each other; moreover, the total size of the molecule must not be altered.—E. K.

See also absts. **922** (influenza), **950** (African horse sickness), **978** (equine encephalomyelitis vaccines), **1000** (calf scours and foot and mouth disease), **1004** (malignant pulmonary lymphomatosis in a sheep), **1055** (chemotherapy), **1086-1089** (rinderpest).

IMMUNITY

PLOTZ, H. (1946.) **Allergenic and anaphylactogenic properties of vaccines prepared from embryonic tissues of developing chicks. I. Skin-sensitivity following the subcutaneous inoculation of typhus vaccines in man.**—*J. Immunol.* **53.** 315–319. **977**

COULSON, E. J., & STEVENS, H. (1946.) **Allergenic and anaphylactogenic properties of vaccines prepared from embryonic tissues of developing chicks. II. Anaphylactogenic properties of typhus-fever vaccines and equine encephalomyelitic vaccines.**—*Ibid.* 321–342. **978**

STULL, A. (1946.) **Allergenic and anaphylactogenic properties of vaccines prepared from embryonic tissues of developing chicks. III. A study to determine whether chick-embryo yolk-sac vaccines contain sufficient egg proteins to cause severe systemic reactions if given to egg-sensitive individuals.**—*Ibid.* 343–353. **979**

These three papers report an investigation into the question of allergic reactions following the administration of vaccines cultivated on chick embryo tissues and the development of sensitization in individuals by the use of such vaccines.

I. At varying periods during and after

course of subcutaneous inoculations of typhus vaccine, 180 normal subjects were examined for skin sensitivity against the vaccine itself, normal egg yolk and egg white. Eleven developed skin sensitivity.

The possible risk of the administration of the vaccine to egg-sensitive individuals is considered. Only one of the 180 individuals skin tested before inoculation of the vaccine had a slight skin sensitivity to the vaccine, egg-yolk and egg-white; but neither this individual, nor those developing skin sensitivity as the result of the inoculations with the vaccine, had a marked systemic reaction when later inoculated with the vaccine subcutaneously.

II. Five typhus (egg-yolk sac) vaccines and one equine encephalomyelitis (whole chick embryo) vaccine were shown to be anaphylactogenic for g. pigs, using gross anaphylaxis experiments, in doses as small as 0·004–0·008 ml. (containing 1·2–3·1 μg. protein nitrogen) and 0·001 ml. (containing 1·6 μg. protein nitrogen) respectively. The antigens concerned were shown by the use of the Schultz-Dale uterine technique to be principally the protein antigens of normal eggs, especially those of the egg-white.

III. The case is described of an egg-sensitive individual who had a severe local reaction following the second injection of an E.E. (whole chick embryo) vaccine. Embryo tissue and egg-yolk proteins were considered the responsible antigens.

By means of Prausnitz-Kustner passive sensitization tests the sera of seven egg-sensitive individuals were shown to give positive reactions with typhus (egg-yolk sac) vaccines, E.E. (whole chick embryo) vaccine, egg-yolk, yolk sac, " chick embryo antigen " and egg-white (one did not react with egg-white). The relative reactivity of these various egg antigens in the vaccines is given.

The author concludes that the injection of egg-sensitive individuals with typhus vaccines similar in preparation to those he investigated might also produce serious immediate systemic allergic reactions.—R. R. A. Coombs.

See also absts. **918, 921** (streptococci), **924** (diphtheria), **929** (*Bact. equirulis* infection), **930** (*Bact. flexneri*), **931** (typhoid), **933** (*S. pullorum* infection), **940, 941, 943** (brucellosis), **944** (*Cl. welchii*), **955, 956** (rabies), **958** (vaccinia antigens), **959** (swine influenza), **964** (ovine pneumonia), **965** (swine fever), **967** (distemper in mink) **961, 962** (equine encephalomyelitis).

PARASITES IN RELATION TO DISEASE [GENERAL]

Lerena, E. A. (1944.) Guatahi (Guataí) enfermedad de terneros de la Provincia de Corrientes. Contribución a su etiologia. [**" Guatai ", a parasitic disease of calves in Corrientes Province, Argentina**].—*Gac. vet., B. Aires.* **6.** 68–71. **980**

This condition is characterized by disinclination to move, unsteady gait and rough coat. Diarrhoea is common and blood may be passed. There is great thirst, small appetite and a " tucked-up " abdomen. The visible mucosae are pale, the rectal temperature is high and the heart fluttering. It affects about 8% of young calves, but the mortality is low and the loss chiefly economic. In all cases examined, *Haemonchus contortus* and *Eimeria zürnii* were found, but no other pathogenic organisms.—R. Macgregor.

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

Jackson, C. H. N. (1944.) **The analysis of a tsetse-fly population. II.**—*Ann. Eugenics.* **12.** 176–205. [For previous article, see *V. B.* **14.** 274.] **981**

Observations are recorded for the years 1935–40 on the tsetse fly population and movements in the original experimental square at Kakoma, Tanganyika, and in a new square at Kakoma, tables being given of atmospheric temperature, saturation deficit and rainfall records, and of the recapture of flies and their distribution. Details are given of male flies recaptured three times, and of long-lived flies caught three or more times. Tables also show the estimated monthly populations over the period and the weekly immigration rate.

From 1937–40 the years became progressively hotter and drier and it is suggested that a long-term climatic cycle may exist. From a study of the recaptures of flies, it appears that the birth-rate closely follows the death-rate and that both almost invariably rise in the dry season; it is thought that dry weather hastens the onset of hunger or the loss of water and kills many flies which fail to find food. A male fly was recaptured after 19 weeks and one female fly was recaptured after 27½ weeks, but as J. did not see it personally he does not accept this record as definite.

The most important finding on dispersal of released flies was that because of re-immigration, there was little effective emigration from a 4 × 4 mile square after the first week. Re-immigrants nearly balanced emigrants; some of the emigrants died without finding food. A male fly can move about ½ mile weekly, but breaks back and does not migrate more than about ½ mile during its life.

The male death-rate is positively correlated with atmospheric saturation deficit, and with the percentage of females in catches of old flies. Each old male fly caught in 10,000 yards of the fly round indicates a population of 7½ old males to the square mile, and perhaps 2–3 times as many females.—U. F. RICHARDSON.

ROBERTS, F. H. S. (1945.) **The occurrence of the pigeon fly (*Pseudolynchia canariensis* Macq.) in Australia, with a note on Australian Hippoboscidae.**—*Aust. vet. J.* **21.** 150–151. **982**

P. canariensis was found on carrier pigeons in Queensland. R. gives brief notes on its habits and life-history, pathogenicity and control. Other hippoboscids recorded from domestic animals in Australia are *Melophagus ovinus* from sheep, *Hippobosca equina* from horses, and *H. maculata* from cattle. Ten species of *Ornithomyia* have been recorded from native birds and four species of *Ortholfersia* from kangaroos. An undetermined species of *Lynchia* is recorded from an unknown host.—H. McL. GORDON.

STEWART, J. D. (1945.) **Scab in sheep in Australia, and its eradication.**—*Aust. vet. J.* **21.** 32–35. **983**

S. gives a brief history of scab, *Psoroptes communis* var. *ovis* infection, in sheep in Australia from its introduction with the sheep in the " First Fleet " of 1788 until its eradication from New South Wales, Queensland and South Australia in 1866, from Victoria in 1875, from Tasmania in 1881 and from Western Australia in 1896. A recrudescence occurred in New South Wales in 1866 in sheep introduced from America, but the disease was again eradicated by destruction of the affected sheep and their in-contacts and the premises where the sheep had been housed.

Scab eradication was achieved by means of legislation to control movement and treatment of sheep. The first Act was passed in New South Wales in 1832. The first dip to be widely used was a tobacco extract and sulphur mixture, later replaced by lime-sulphur mixtures.—H. McL. G.

See also absts. **1030** (D.D.T. toxicity), **1031** (derris toxicity), **1058** (warble fly).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

I. GROSSO, A. M., PRIETO, C., & STROBINO, L. E. (1944.) Dioctophimosis en dos especies de nuestra fauna autóctona. **[Giant kidney worm (*Dioctophyme renale*) infestation in a coati and a red wolf in Brazil.]**—*Gac. vet., B. Aires.* **6.** 2–12. **984**

II. GROSSO, A. M., PRIETO, C., & STROBINO, L. E. (1944.) Otro caso de dioctofimosis en un lobo rojo. **[Giant kidney worm infestation in a red wolf in captivity.]**—*Ibid.* 66–67. **985**

I. An adult female coati (*Nasua solitaria*) was suspected to be near parturition. It died next day. The abdomen was enlarged and was found to contain 400 ml. of yellow liquid with a quantity of fibrin. A female *Dioctophyme* was found in the membranes. Part of the omentum and other membranes was covered with a web of granular tissue, which had hypertrophied in the region of the right kidney with foci of suppuration. The left kidney was correspondingly hypertrophied. The heart was engorged and in maximum diastole. The liver had a fatty degeneration and was adherent to the diaphragm. Other organs were normal.

An adult female red wolf (*Chrysocyom brachiurus*) died of enteritis. The left kidney was enlarged and the right was reduced to a small bag containing a male specimen of the dog kidney worm.

The parasites had six nodules round the mouth, each ending in a papilla; within the ring so formed, was another of six smaller nodules with papillae. The male was 10 cm. long, and the female 67 cm. long and 9 mm. in diameter.

STEFANSKI (1928) stated that the genus *Dioctophyme* has only six buccal nodules, but this is considered incorrect as these specimens had 12 and others have been described with 18, although conforming in all other respects to the typical *Dioctophyme*. The alternative hosts are believed to be fish of the species *Idus idus*, crabs and molluscs. The parasite is ingested by a mammalian host and passes by way of the circulation to the kidneys, having a predilection for the right kidney, which is destroyed by compression of the parenchymatous vessels. When the destruction is complete, the parasite is evicted into the peritoneal cavity.

The disease is of growing importance in human medicine owing to the impossibility of its control. Study of aboriginal fauna to detect other possible carriers is therefore recommended.

II. An adult female red wolf with dyspnoea and capricious appetite was treated for two months with sodium cacodylate subcutaneously. Being then clinically improved it was returned to its cage, but died, after a fight with another wolf, from haemorrhage due to a rupture of the liver. P.M., the right kidney was found to be a sac with walls 2 mm. thick, with two orifices at the anterior end, from which protruded a male and a female *Dioctophyme*, the male 25 cm. in length and 3 mm.

in diameter and the female 35 cm. in length and 9 mm. in diameter. Both were dead and were dark grey instead of blood red in colour. It is possible that the parasites were killed by the arsenical drug administered to the host and further experiments on this line are recommended.
—R. MACGREGOR.

See also absts. **1059** (hexylresorcinol), **1060** (phenothiazine), **1075** (infection of pastures).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

SAVAGE, A., & ISA, J. M. (1946.) **Lymphocytoma in a cow's heart.**—*Cornell Vet.* **36.** 279–280. **986**

The authors describe a lymphocytoma found in the heart muscle of a six-year-old Holstein cow. Lesions were also present in the left bronchial lymph node and in the mediastinal lymph node chain. From the extent of involvement of these nodes the authors suggest the possibility of retrograde metastasis.—A. R. JENNINGS.

JASPER, D. E., & KANEGIS, L. A. (1946.) **Adamantinoma in the bovine.**—*Cornell Vet.* **36.** 262–267. **987**

The authors describe an adamantinoma with extensive involvement of the mandible in a young Holstein bull. The histology of the neoplasm is discussed.—A. R. JENNINGS.

NELSON, N. M. (1946.) **Leiomyoma of the ventral ligament of the oviduct of the chicken.**—*Amer. J. Path.* **22.** 1047–1057. **988**

N. describes a benign leiomyoma of the ventral ligament of the oviduct which occurred in a flock of pedigree White Leghorns to the extent of 14·8% in the laying birds. It appeared to be closely related to normal physiological processes in the ligament and did not interfere with egg production. It is suggested that this structure may be hyperplastic rather than neoplastic and that this condition was indirectly associated with the concentration of sex hormones. The incidence suggested the possibility of an hereditary factor.
—A. R. JENNINGS.

AYRE, J. E., & BAULD, W. A. G. (1946.) **Thiamine deficiency and high estrogen findings in uterine cancer and in menorrhagia.**—*Science.* **103.** 441–445. **989**

The authors studied 180 ambulatory patients with menorrhagia or amenorrhea. The cytology of vaginal smears was investigated before and after administration of vitamin B_1, the other constituents of the vitamin B complex and liver extract. An abnormal oestrogenic activity was found to be coupled with a vitamin B_1 deficiency in cases of menorrhagia and of uterine cancer. A possible aetiological correlation between the dietary deficiency, the abnormal oestrogen level and the pathological lesions has been suggested.
—E. KODICEK.

SCHWARZ, E. (1946.) **Cellular gigantism and pluripolar mitosis in human hematopoiesis.**—*Amer. J. Anat.* **79.** 75–115. **990**

The occurrence of giant erythrocytes and leucocytes and their cellular precursors is described in material taken from the blood stream and bone marrow of human subjects with various forms of anaemia and leucaemia. It is suggested that multinucleate giant cells arise as a result of completed karyokinesis with suppression of cytokinesis by some unknown factor, which is probably extracellular.—MARY C. LOBBAN.

DISEASES [NON-INFECTIVE] OF BREEDING STOCK

NIELSEN, F. (1945.) Erfaringer angaaende Brugen of artificiel Insemination in Danmark. **[Experiences of artificial insemination in Denmark.]**—*Maanedsskr. Dyrlaeger.* **57.** 276–298. **991**

N. describes the historical development and present organization of artificial insemination in Denmark: this is controlled by the co-operative associations of cattlebreeders, numbering 86, with a membership of 41,132. On an average, 540 cows are served by each bull; 80–90% of all inseminated cows become pregnant.

N. discusses methods of obtaining spermatozoa, the importance of microscopic examinations, dietetic factors influencing spermatozoa quality, the superiority of the American and Sørensen's diluting fluids, the advisability of transporting semen in cooled glass containers and the method of insemination with rectal fixation of the cervix uteri. Successful results require good quality semen, the presence of oestrus, the absence of genital disorders and choice of appropriate times. These factors and the treatment of sterility are discussed in detail.

Purulent vaginal discharges in cows and genital infections in bulls contra-indicate insemination. Semino-vesiculitis and ampullary infections are usually due to brucella infections, but may be caused by the tubercle bacillus or other organisms. These conditions present greater difficulties in

routine diagnosis than epididymitis and orchitis. Clinical tests should be reinforced with blood examination and culture of organisms from seminal fluid. Artificial insemination cannot be entrusted to laymen in view of the necessity for expert diagnostic skill.—E. F. McCarthy.

Anon. (1945.) **[Artificial insemination of domestic animals.]** pp. 16. West China: Institute of Agricultural Research, Union University. **992**

This is a report on the artificial insemination of milk cows and goats in Cheng-tu, carried out by the Agricultural Research Institute, West China Union University. Artificial insemination was urgently needed on account of the lack of good male animals, particularly pedigree bulls, and the difficulty of transport in mountainous districts, but demonstrations were necessary to convince the farmers of its real value and to remove suspicions.

An artificial vagina made of a bamboo cylinder lined with a piece of old rubber tyre was used because of its low cost and simplicity of construction. Water at 42°C. filled the space between the bamboo cylinder and the rubber lining through a hole which was made on the upper part of the bamboo. To one end of the cylinder a rubber tube was attached, by which the semen was directed to a sterile test tube.

For diluting the semen, egg-yolk buffer solution was used. This solution kept the spermatozoa in excellent condition for 72 hours. Semen was collected from a Holstein bull and an Indian goat. More than 200 goats and 50 cows were served by artificial insemination. The percentage of fertilization was above 80 and the offspring were as good, if not better, than those produced from natural service.—S. J. Chu.

Phillips, P. H., & Spitzer, R. R. (1946.) **A synthetic pabulum for the preservation of bull semen.**—*J. Dairy Sci.* **29.** 407–414. **993**

Synthetic diluents were compared with normal yolk buffer. The end-point was the time when a clear-cut demonstration of superiority was evident in one or other, as measured by the low motility eventually evident in the inferior medium. Buffer concentrations were 0·15 M, monobasic potassium phosphate and dibasic sodium phosphate being employed to give a final pH of 6·8 to 7·0. Results show that purified lecithin from soya bean, with added glucose, was somewhat superior to the natural yolk buffer; in any case the addition of glucose to this, in concentrations of 0·02–0·04 M, was an improvement. The addition of gums such as arabic, acacia, and tragacanth was helpful in preventing the settling out of sperm on standing.

Various dicarboxylic acids had little effect on survival. Bacterial contamination sometimes occurred. Tests were therefore made with antibiotics in the medium. Sulphapyridine proved definitely toxic to sperm, but most of the other sulphonamides had no ill effects. Sulphaguanidine and streptomycin appeared to have a favourable effect, presumably on account of heavy bacterial contamination of the semen samples concerned. The final pabulum based on the foregoing results contained glucose, galactose, purified lecithin, gum acacia, and a sulphonamide. It had the advantage that each individual sperm was easily discernible under all powers of the microscope. Buffered to an initial pH of 6·9, it gave 2% better results in field tests on 138 cows than when the natural yolk buffer was used under similar conditions.

—F. L. M. Dawson.

Hutt, F. B. (1946.) **Some hereditary abnormalities of domestic animals.**—*Cornell Vet.* **36.** 180–194. **994**

H. discusses the advances made during the past 10–12 years in our knowledge of the hereditary abnormalities of domestic animals.

In most of the known cases, the hereditary defect is due to a simple, recessive, autosomal gene. The causative genes are not located in the sex chromosomes. The heterozygotes are not visibly affected.

A number of examples are cited and briefly described. The examples are grouped under the organ systems most affected. Those affecting the skeletal system include reduced phalanges in cattle, in which the first two phalanges are missing in all four feet and the hooves are loosely connected by skin to the metacarpals or metatarsals; a legless condition in swine, in which all the leg bones are missing, although the pelvic and shoulder girdles are normal; prognathia (undershot) and brachygnathia (overshot) in sheep and distortion of the molar teeth in cattle. Defects of the integument include nakedness in fowls, curly coat in horses and wattles in swine. Defects of the digestive system include an increased tendency to bloat in cattle (which appears to be inherited although the exact genetic basis is unknown), pendulous crop in turkeys, and atresia coli in horses. Examples of conditions affecting the nervous system are congenital spasms in cattle, epilepsy in cattle, and paralysis in sheep. Those affecting metabolism are porphyrinuria in cattle and swine and high uric acid level in the urine of Dalmatian dogs. Mutations which affect colour and function include foetal death in yellow mice, the merle colour patterns associated with deafness and sightlessness in dogs, a grey colour in sheep associated with early death, a high susceptibility to bloat and digestive disturbances, white heifer disease in cattle and platinum colour in foxes

associated with a high incidence of still-births.

It is stated that no less than 70 lethal characters in domestic animals have been listed, of which 25 are in cattle, seven in horses, nine in swine, seven in sheep, 19 in fowls, two in turkeys and one in the duck.

The increased use of artificial insemination demands great care in the selection of sires to avoid wide dissemination of such defects. It is suggested that this risk could be eliminated best by mating the selected sire to a number of his full sisters, half sisters and other near relatives before using him generally.—M. C.

GOERTTLER, V. (1945.) Besserung der Fortpflanzungsergebnisse in der Rinderzucht durch natürliche Paarung. **[Improving fertility in cattle breeding by natural mating.]**—*Tierärztl. Z.* No. 2/3. pp. 19–24. **995**

In G.'s experience, one-third of the cows considered infertile have no abnormality and are apparently healthy. He considers that the majority of such animals have normal oestrous cycles but the symptoms of oestrus are slight and not recognized by the herdsman, with the result that the animals are not taken to the bull. After discoursing at some length upon the time relation of oestrus and ovulation, G. concludes that hand mating, where the cow is led to the bull, is not satisfactory. He recommends that the bull be allowed to graze with the cows or, failing this, advises that all cows suspected of being in oestrus be turned into a small paddock with the bull. By such methods it is claimed that the majority of infertile cows can be got in calf. 267 cows from herds where the average conception rate was 60% were mated under the above conditions and 92% became pregnant. The advantages attributed to the free mating method are that animals in oestrus are rapidly detected by the bull and served several times during the oestrous period. It is thought that the love-play which precedes natural mating induces a complete orgasm in the cow which favours the transport of the sperm. In G.'s experience, bulls remain more vigorous and in better condition when allowed to serve cows at pasture.—ALFRED T. COWIE.

DI MARTINO, M. (1943.) La gravidanza molare in veterinaria. **[Uterine mole in animals.]**—*Nuova Vet.* **21.** 175–177. **996**

A three-year-old Alpine cow, after a few irregular and weak heats, was mated and delivered a uterine mole at the eighth month. She failed to come into heat for four months thereafter and then only as a result of hormone treatment. She was again mated by the same bull and delivered another uterine mole at the fifth month after which she was slaughtered.

Uterine moles are usually accompanied by a more or less normal foetus, in which case they may be regarded as twins in which development has been disorganized, but in this case there were no signs of other foetuses. Faulty spermatozoa, another common cause, could not have been responsible, as the bull had been a proved stock-getter both before and after these matings. It seems probable that the cow herself had some factor that disorganized foetal development, although no such factor has been recorded in veterinary literature. This theory is supported by the irregular heats and the fact that, after the first delivery, but before the hormone treatment, she had bilateral ovarian atrophy. In other respects she was healthy and well nourished, although rather small.—R. MACGREGOR.

I. JONES, J. M., WARWICK, B. L., PHILLIPS, R. W., SPENCER, D. A., GODBEY, C. B., PATTERSON, R. E., & DAMERON, W. H. (1946.) **Inheritance of skin folds of sheep.**—*J. Anim. Sci.* **5.** 154–169. **997**

II. TERRIL, C. E., & HAZEL, L. N. (1946.) **Heritability of face covering and neck folds in range Rambouillet lambs as evaluated by scoring.**—*Ibid.* 170–179. **998**

I. An attempt to correlate skin folds with genetical constitution indicated that the sire significantly affects skin fold production in the offspring and that the correlations of other relationships, *i.e.*, dam to daughter, dam to son, half-brother to half-brother, and half-sister to half-sister, are highly significant. It is suggested that smoothness is due to dominant multiple genes, the number probably not being large. It should be easy to reduce skin folds by selection of breeding stock on phenotype alone.

II. A survey of heritability of face covering and neck folds, using "scoring for points" as a method of facilitating statistical analysis of data obtained, indicated that these traits are highly heritable. Selection for breeding by phenotypic merit at weaning time is advised and, by using ram lambs as sires, results of progeny testing may be more easily exploited.—G. B. S. HEATH.

See also abst. **1096** (general genetics).

DISEASES, GENERAL

SIUTS, H. (1943.) Gründe der Ausmerzung von Milchkühen in den oldenburgischen Gemeinden Wangerland und Minsen. **[Causes for removal of milch cows from herds in the districts of**

Wangerland and Minsen, Oldenburg.]—*Dtsch. tierärztl. Wschr./Tierärztl. Rdsch.* **51/49.** 110–111. **999**

The reasons for disposal of cows were investigated in 53 herds: the figures given relate to a total of 1,025 animals. The following table gives the reasons for disposal and compares the figures obtained for Oldenburg with those given by GÖTZE [see *V. B.* **12.** 457] for the Hanover clinic and by SÖNDGEN (1942) for the Cologne-Aachen area.

Reason for disposal	*Percentages given by*		
	GÖTZE	SÖNDGEN	SIUTS
Surgical and internal diseases...	25·0	11·5	8·2
Reproductive disorders ...	22·0	42·7	28·7
Diseases of the udder	12·0	6·4	9·9
Disorders of pregnancy, calving, and the puerperium ...	12·0	3·4	5·8
Poor yield, genetic errors, age (11 years and over) ...	10·0	18·4	30·7
Tuberculosis ...	8·0	9·6	9·3
Other non-genital diseases ...	5·0	7·0	7·4
Parasitic diseases	3·0	—	0·2
Metabolic disorders	3·0	0·7	—

The high figures given by GÖTZE for the first and fourth categories are explained by the fact that the animals coming to the clinic were a selected population. Since different practitioners encounter a very varying incidence of sterility and other reproductive disorders in their practices it is not surprising that the percentage of animals under this heading should vary (SÖNDGEN compared with SIUTS). Animals which have poor milk yields or are aged rarely or never come to the clinic, so that the figures of GÖTZE would be expected to include few cows in this category. Most of the animals disposed of because of "other non-genital diseases" were suffering from the effects of foot and mouth disease: many young animals had myocarditis. Some cases of Johne's disease were also included under this heading: the disease occurred in a number of herds in the area and in these herds the incidence was high. The average age of the total of 1,025 cows was 7·3 years and the average age of those cows which were disposed of before age (11 years or over) alone could be considered the reason, was 6·1 years. —E. G. WHITE.

—, (1946.) **Discussion: intestinal disorders of the newborn.** [Speakers: CRUICKSHANK, R., LOVELL, R., WORDEN, A. N., WORRALL, R. L., SUTHERLAND, R., DYNSKI-KLEIN, M., CRAWFORD, M., & BODIAN, M.]—*Proc. R. Soc. Med.* **39.** 389–394. **1000**

Medical and veterinary speakers stressed the value of colostrum in providing the newborn with essential nutrients and antibodies. LOVELL observed that the current practice of depriving calves of colostrum greatly lessened their ability to resist infection, with the result that calf scour was prevalent. *Bact. coli* was accepted as the organism most commonly associated with this disease and particularly virulent strains were known to exist. Accompanying predisposing factors, however, played an important part and successful preventive measures included the feeding of colostrum and the avoidance of feeding too infrequently or too much at a time. The diet of the pregnant cow should be sufficient in quantity, particularly as regards its vitamin A content during the winter. Several speakers agreed that calf scour should be considered as a general septicaemic disease and not merely as a local enteritis. A plea was made for more frequent recorded observations on natural outbreaks. In the discussion on the aetiology of gastro-enteritis in the newborn, mention was made of two outbreaks in children from which a virus-like agent was isolated and CRAWFORD described the sudden deaths of calves in herds in Ceylon in which foot and mouth disease was rife. The usual symptoms and lesions were not in evidence, but P.M. examinations revealed intense congestion of the mucosa of the abomasum and intestines.—J. K.

WHITLOCK, J. H., & BAKER, D. W. (1946.) **The diagnosis of diseases of lambs.**—*Cornell Vet.* **36.** 241–250. **1001**

Diseases of lambs are tabulated under the headings: (1) diseases which may cause death with few symptoms warning of illness, (2) diseases characterized by nervous symptoms, (3) diseases characterized chiefly by skin (wool), oral, or conjunctival lesions, (4) diseases characterized by lameness and (5) other diseases. By this means, the qualified veterinarian may diagnose diseases of sheep with "relative ease".

[This attempt to reduce diagnosis of disease to a mere matter of referring to tables is probably helpful to the student, but is unlikely to be reliable in practice, since it assumes that atypical cases will not be encountered and that the condition will be uncomplicated by the presence of other disease.]—G. B. S. HEATH.

MACDONALD, A. J. (1945.) **The problem of poultry mortality.**—*Indian vet. J.* **22.** 113–118. **1002**

This is a survey of the poultry industry in India. Reasons are given for the backward state of the industry and the steps taken during the war towards its improvement are described. Mortality is especially high in chicks during the first six months, chiefly as a result of malnutrition and attacks by predatory animals. Mention is made of control measures which are being or should be directed against the following: coccidiosis, fowl pox, spirochaetosis, Newcastle disease, fowl cholera, neurolymphomatosis. The difficulties of handling these diseases in India are stressed.

—M. M. HUQ.

GÖBEL, F. (1944.) Ein seltener Fall von Otitis externa bei einem Pferde. [**A rare type of otitis externa in a horse.**]—*Dtsch. tierärztl. Wschr./Tierärztl. Rdsch.* **52/50.** 322. **1003**

The condition was purulent and caused by a metallic foreign body. This was removed under chloral hydrate anaesthesia, the wound was drained and healed in three weeks.—J. M. R.

LUCAM, F. (1945.) Inclusions cellulaires dans la "bouhite". [**Cellular inclusions in "bouhite".**]—*Rev. Med. vet., Lyon et Toulouse.* **96.** 253–258. **1004**

In the dialect of Landes, *bouhite*, a word conveying the idea of breathlessness, is applied to verminous broncho-pneumonia and to *bouhite vraie* of sheep. This latter condition is confined to Landes, is invariably fatal and is of unknown aetiology; the principal clinical signs are dyspnoea and progressive emaciation. A characteristic finding P.M. is nodular or diffuse infiltration of the lung parenchyma with lymphoid cells. It resembles the condition described by MARSH in 1923 in Montana and by DE KOCK in 1929 in South Africa as "progressive pneumonia". In L.'s opinion it should be called "malignant pulmonary lymphomatosis of sheep". Sections of lung tissue stained by Giemsa's method revealed dark-blue granular inclusions in macrophage-like cells of the alveolar walls in three cases out of 30 examined histologically. The specificity and nature of these inclusion bodies has not been determined.

—W. M. HENDERSON.

EMSBO, P. (1940.) Aksedrejning af den venstre laterale Leverlap hos Svinet. (Lejeforandringen som Aarsag til Dodsfald hos aeldre Svin og Søer.) [**Torsion of the left lateral lobe of the liver in pigs.**]—*Maanedsskr. Dyrlaeger.* **52.** 353–378 & 388–403. **1005**

E. found that cases of torsion of the left lateral lobe of the liver occurred relatively often in older pigs, and were sometimes accompanied by atrophy or necrosis (one case) of the lobe or by death of the animal, caused by haemorrhage in the abdominal cavity. Torsion of the left lateral lobe of the liver is thought to occur about as frequently as torsion of the spleen in pigs, but it is more often fatal. The cases accompanied by haemorrhage in the abdominal cavity are thought not to have been described before.

During 15 months, from 1939–40, E. autopsied 99 sows, which had died from a number of different disorders. Of these animals, nine had died from haemorrhage in the abdominal cavity caused by torsion of the left lateral liver lobe. All of them were sows 1–6 years old. They all appeared to be in good condition and seven of them were suckling a litter of pigs when they suddenly became ill, without any obvious cause. In two cases the animals were found dead in the morning, having been well the previous evening. In the other cases symptoms included lowered appetite, dullness, apathy and laboured respiration. One animal attempted to vomit. The disease lasted from about 12–48 hours. P.M. examination of the pigs revealed anaemia and in one case icterus. In the abdominal cavity 4–9 litres of blood were found. A torsion of the left lateral lobe of the liver of 180°–360° was found; from the place of the torsion the lobe hung down, enlarged and distended with blood. The blood had reached the abdominal cavity through the capsule of the liver. It is supposed that certain alterations of the shape of the liver lobules, which are generally found in older sows, dispose the torsion. In sows giving suck the alterations in pressure seem to be of importance. The special movements of the sow, lying on its right side to suckle, are thought to bring about the actual torsion.—H. C. BENDIXEN.

BODINGBAUER, J. (1946.) Stomatogene (dentogene) Herdinfektion beim Hund. [**Septic infections of dental origin in the dog.**]—*Wien. tierärztl. Mschr.* **33.** 97–114. [English, French and Russian summaries.] **1006**

Detailed accounts are given of three dogs in which general symptoms of illness, related to tooth infections, were ameliorated or dissipated, by extraction of the affected teeth in two cases and by conservative local treatment in the third. Haemolytic streptococci, pathogenic for mice, were isolated from the local lesion (carious left upper molars with extensive bone involvement), local lymph nodes and circulating blood in the first case, from the affected teeth (carious upper molars) and circulating blood in the second case, and from the affected tooth (right lower canine with root fracture and periapical resorption) in the third case. In the first dog, there was a severe local lesion, swelling of the local lymph nodes (retropharyngeal, mandibular and superior

cervical), and general symptoms of illness, especially cardiac trouble; despite improvement following tooth extraction, the dog died a week later from a heart attack and a lesion of mitral endocarditis was found. The second dog had fever, nephritis and gastritis, and the third, fever and nephritis. In the latter animal, an increased blood sedimentation rate coincided with exacerbations of symptoms, and a return to normal rate occurred on recovery.—E. COTCHIN.

ZELDENRUST, J., & VERLINDE, J. D. (1942.) Intersexualiteit bij een hond. **[Intersexuality in a dog.]**—*Tijdschr. Diergeneesk.* **69.** 6–10. [English, French and German summaries.] [English summary slightly amended.] **1007**

Intersexuality with sex reversal and prematureness, was observed in a female Sealyham terrier. The dominating male sexual factors during sex reversal transformed the egg follicles into embryonic seminal canals, causing the formation of an ovariotestis.

ZEPP, C. P. (1945.) **Nonparasitic skin diseases of the dog.**—*J. Amer. vet. med. Ass.* **106.** 361–366. **1008**

The diseases are divided into (1) dermatitis and (2) eczema and the principal causes in order of frequency are listed thus: contact irritants, constitutional disturbances (gastro-intestinal, endocrine, renal), diet, bacteria, heredity. Z. believes that the sebaceous glands are better developed in the short-haired breeds and lays stress upon the value of the oily protective coating deriving from these glands as a safeguard against sunlight, moisture, bacteria, etc. The destruction of this oily coating in the short-haired breeds by frequent washing and stripping renders them especially liable to skin disease. Preventative treatment in this respect means less stripping and washing in summer and active treatment is restorative, with oily applications. A neurogenic factor (irritation due to scratching, etc.) is in all cases at the same time treated with sedatives.

Constitutional disturbances are such conditions as intestinal intoxication from liver dysfunction and constipation, intestinal parasites and bad teeth. Appropriate treatment is suggested. With regard to parasites, Z. believes that whipworms are especially responsible for skin complaints; since they are difficult to remove by anthelmintics, surgical removal of the caecum is suggested.

Endocrine imbalance is next considered. Certain cases have benefited after thyroid medication but no clinical description is given of these cases. Alopecia of sexual origin (atrophied testicle, enlarged prostate, tumorous testicle, etc. in the male, and in the female, enlarged vulva with or without discharge and irregular heat periods) is discussed at some length. Surgical and hormonal treatment is suggested for these cases. According to Z., practically all dogs with alopecia have one or more of the sex disturbances and if the affected organs are removed the alopecia disappears. Other skin conditions with a sexual cause are loss of hair around the eyes, pudendum and abdomen and in the female poor coat generally. Ovaro-hysterectomy is suggested as a cure. Kidney disease, diet and bacteria are next dealt with. Whilst recognizing the skin complaints arising from nephritis, Z. places little stress upon diet as a cause of skin disease. As a site of bacterial infection Z. stresses infected vulvae or sheaths, anal glands, teeth, etc. and describes how the organisms are spread through licking of the affected parts. Under this last category Z. places acanthosis nigricans, ascribing the complaint largely to infected anal glands. Treatment consists in their surgical removal, the skin lesions being at the same time dressed with sulphathiazole cream.—A. H. HOGG.

See also absts. **1029** (syncope in pigs), **1045** (joint-ill in foals), **1050** (calf diarrhoea), **1063** (colic), **1064** (broken wind), **1102**, **1095** (diseases of the pig).

NUTRITIONAL AND METABOLIC DISORDERS

MYBURGH, S. J. (1946.) **The biological values of the proteins of some South African (whole seed) maize varieties.**—*Onderstepoort J. vet. Sci.* **21.** 57–77. **1009**

Determinations were made of the biological values of the proteins of whole maize seed grown under South African summer rainfall conditions. Eleven named and two unnamed varieties were each tested upon groups of six white rats. At an 8% protein level in the diet, the biological values of yellow varieties were found to be slightly higher (58·5–74·9) than those of the white varieties (55·5–67·4).—R. MARSHALL.

AXELSSON, J., & OLSSON, N. (1944.) Mineralämnen och vitaminer i husdjurens utfodring. **[Minerals and vitamins in the nutrition of the domestic animals.]** pp. 31. Stockholm: Emil Kihlströms Tryckeri A.-B. 8vo. **1010**

The authors discuss the advantages of providing rock salt for farm animals in Sweden, also deficiencies in Ca and P in certain areas of the country, and also of I_2 and Fe. They discuss the requirements of mineral salts, carotene and vitamin A, vitamin B, vitamin C and vitamin D for the several species. The vitamin E content of the rations of domestic animals is usually adequate.—R. PETER JONES.

LEITNER, Z. A., & MOORE, T. (1946.) **Vitamin A and skin disease.**—*Lancet.* **251.** 262–265. **1011**

No evidence was obtained that the skin diseases of human beings common in Britain were closely associated with vitamin A deficiency. In certain rare skin affections, such as Darier's disease, pithyriasis rubra pilaris and ichthyosis, the plasma vitamin A was found to be below the normal and most, though not all patients, had very low values at one time or another. When massive doses of vitamin A were given to patients with Darier's disease or pithyriasis rubra pilaris, abnormally high plasma vitamin A values were eventually obtained, in one case the value recorded being nearly 2,000 I.U. per 100 ml. In two cases of Darier's disease, treatment with Grenz rays and vitamin A therapy brought about almost complete recovery. In other cases, such improvement as took place might have been accounted for by spontaneous remissions.—E. M. CRUICKSHANK.

WISE, G. H., CALDWELL, M. J., & HUGHES, J. S. (1946.) **The effect of the prepartum diet of the cow on the vitamin A reserves of her newborn offspring.**—*Science.* **103.** 616–618. **1012**

A comparison was made on three groups of dairy cows in the later stages of gestation, of the effect of feeding a standard winter ration, of pasture grazing in addition for high carotene intake, and of the supplementation of one million U.S.P. units of vitamin A per cow daily. Vitamin A supplementation greatly increased the vitamin A content of both the serum and the liver of the newborn calves, but high carotene intake increased only the serum carotene of the newborn calves. The placenta may be more permeable to the esterified form of vitamin A, occurring in fish liver oils than to the alcohol form occurring in bovine blood.—E. M. CRUICKSHANK.

RUBIN, M., & BIRD, H. R. (1946.) **The apparent antagonism between vitamin A and carotenoids in the fowl.**—*Science.* **103.** 584–586. **1013**

Groups of 25 day-old chicks were fed for six weeks on a basal diet which contained yellow maize, maize gluten meal and alfalfa leaf meal as sources of carotenoids. Supplements of vitamin A in various forms, or carotene or oil in which vitamin A had been destroyed, were given to the different groups so as to supply 9,000 I.U. of vitamin A per 100 g. of diet. In a few cases, 3,000 I.U. and 60,000 I.U. were also given. Shank pigmentation, as a guide to the tissue carotenoid content measured at the end of the experimental period with a Heiman Carver colour rotor, was found to be less in all groups than in the group fed the basal diet alone, except in the group given carotene. It was concluded that vitamin A, not the oil containing it, was responsible for the suppression of pigmentation.—E. M. C.

HANNESTAD, C. (1945.) Rakittkramper hos unggris. **[Convulsions in young pigs with rickets.]**—*Norsk VetTidsskr.* **57.** 1–14. **1014**

Pig tetany includes a group of diseases manifested in various nervous phenomena from slight uneasiness to spasm of the glottis and general convulsions, which frequently prove fatal in a short time unless the correct treatment is given. The cause is to be attributed to hypocalcaemia, possibly coupled with defective function of the parathyroid.

Tetany is treated by the intramuscular injection of a freshly prepared solution of sodium phenyl-ethyl barbiturate (preferably the original preparation, luminal sodium) in the following doses:–6–10 weeks: 0·03 g. per kg. live weight, 10–18 weeks: 0·04 g., and over 18 weeks: 0·05 g., supplemented by injection of 5–40 ml. of 20% calcium borogluconate solution according to size. The two following days, only liquid food should be given.—R. PETER JONES.

ENDER, F., & HELGEBOSTAD, A. (1943.) Undersøkelser over beriberi hos rev under drektighet og laktasjon, samt forsøk på å bestemme revens vitamin B_1-behov. **[Research on vitamin B_1 deficiency of silver foxes during pregnancy and lactation.]**—*Norsk VetTidsskr.* **55.** 3–50. [English & German summaries.] **1015**

The authors discuss an increased incidence of vitamin B_1 deficiency in silver fox farms in Norway during the preceding 5–8 years, and attribute it to the use of a cheaper and more restricted diet with low vitamin B_1 content. To determine the minimum amount of B_1 required to prevent the onset of deficiency symptoms a series of experiments were made using small fox cubs, two and a half months old, older cubs and pregnant and lactating vixens. Three types of basal diet were used, from two of which the vitamin B_1 had been extracted and the third of which contained little or no vitamin B_1: supplements of the vitamin were given daily, *per os*, in varying doses.

In small cubs, 0·15 mg. vitamin B_1 prevented the onset of symptoms of vitamin B_1 deficiency, but 0·02, 0·035 and 0·075 mg. did not. Doses of 0·20 and 0·15 mg., but not of 0·05 mg., sufficed for older cubs. The effectual minimum dose for cubs was therefore considered to be in the neighbourhood of 0·10 mg. Pregnant and lactating vixens needed 0·3–0·6 mg. and 1·2 mg. respectively to prevent symptoms of vitamin B_1 deficiency appearing. Sucking cubs were found to be more prone than their mothers to develop symptoms. The vitamin B_1 requirements of silver foxes, in spite of their much lower body weight were found to be nearly equal to those of human beings. The optimum amount of vitamin B_1

required for vigorous health was not determined. Workers differ on this point, some prescribing three times the minimum, some much more.

The symptoms of vitamin B_1 deficiency as found in silver foxes are described. Among the earliest are loss of appetite in the vixens and want of energy to suck in the cubs. Other early symptoms are drowsiness, retarded growth, subnormal temperature, diarrhoea and gastro-enteritis. Later, disturbances of movement may develop, including ataxia, going round in circles, rolling, spinning and waltzing movements and sometimes " high gait ". Tonic and clonic spasms are common in severe cases and opisthotonus is usual. Pregnant mothers may abort or produce cubs born dead ; lactating mothers may eat their cubs. Treatment with large doses of vitamin B_1 is successful in most cases if begun early, but if delayed, or if the case is severe, the affected animal may die ; if it recovers some muscular or nervous disability may persist.

Since fish has been much used in the feeding of silver foxes the authors investigated the vitamin B_1 content of a number of kinds of fish as well as that of offal and various other feeding stuffs. Whiting (whole fish) had the highest content among the fish tested (95 I.U.), mackerel (whole fish) contained 55 I.U. and cow's heart 1·35 I.U. These figures were confirmed to some extent by a small feeding experiment with a few silver foxes.

The authors recommend the addition of feeding stuffs rich in vitamin B_1, such as yeast, bran, mill refuse, wholemeal wheat germ, liver, heart, cod oil and roe to the usual diet supplied to silver foxes.—R. Peter Jones.

Cunha, T. J., Lindley, D. C., & Ensminger, M. E. (1946.) **Biotin deficiency syndrome in pigs fed desiccated egg white.**—*J. Anim. Sci.* **5.** 219–225. **1016**

A biotin deficiency was produced in pigs by feeding 30% of desiccated egg white in a ration containing sucrose, lard and mineral mixture, fat-soluble vitamins and vitamins of the B group except biotin. The defficiency caused alopecia, spasticity of the hind legs, cracks in the feet and a dermatosis of the skin characterized by dryness, roughness and a brownish exudate. Intramuscular injections of 100 μg. of biotin daily prevented the occurrence of these symptoms. The biotin-deficient pigs required 50% more feed per lb. of weight gained than the pigs fed biotin and their rate of daily gain was decreased by 45%.

—E. Kodicek.

Luckey, T. D., Moore, P. R., Elvehjem, C. A., & Hart, E. B. (1946.) **The activity of synthetic folic acid in purified rations for the chick.**—*Science.* **103.** 682–684. **1017**

The addition of 25 μg. of synthetic folic acid to 100 g. of a basal synthetic ration for chicks prevented the reduced growth, poor feathering condition and low haemoglobin and haematocrit values which were consistently obtained when this ration alone was fed to chicks. A larger dose of folic acid was needed when the basal diet contained sulphasuxidine. Isolated crystalline vitamin B_c gave a similar effect, although the growth was slightly less than in chicks fed similar levels of synthetic folic acid. When vitamin C or whole liver powder was fed with folic acid, the chicks grew better than when given folic acid alone. The addition to the diet of 50 μg. of α-pyracin (5-pyridoxic acid) alone or with synthetic folic acid produced slightly better growth, but no improvement in feathering or haemoglobin concentration.—E. Kodicek.

Horta, J., & Santos, S. (1944.) Osteodistrofia fibrosa (osteofibrose) dos eqüídeos. [**Equine osteodystrophia fibrosa**].—*Rev. Med. vet., Lisboa.* **39.** 378–405. [English and French summaries.] **1018**

The authors studied a number of cases of osteofibrosa in military horses and describe the clinical symptoms, P.M. lesions and results of chemical examination of the blood. They consider that the disease is due to disturbed metabolism of calcium and phosphorus as a result of an unsatisfactory ration and a deficiency of calcium in the drinking water. They state that the parathyroid glands are hypertrophied.—M. C.

I. Ott, X. (1944.) Über " Tobsuchts-Milchfieber ". [**On " atypical milk fever ".**]—*Schweiz. Arch. Tierheilk.* **86.** 341–345. **1019**

II. Wyssmann, E. (1944.) Bemerkungen zu vorstehendem Artikel. [**Remarks on I.**]—*Ibid.* 345–346. **1020**

I. Six cases of cows believed to have " atypical milk fever " are reported. Typical symptoms were a craving to nibble and lick, salivation, frothing and abnormal posture. The urine was investigated in only one case, when a positive test for diacetic acid was obtained. The animals responded well to udder insufflation together with injection of adrenalin preparations.

II. W. considers that the cases reported may have been acetonaemia, in spite of the lack of positive evidence from urine tests or report of the smell of acetone in breath or urine. The good response to insufflation may have indicated a parallel circulatory disorder. In any case, it is doubtful whether the condition may be ascribed to the above metabolic disturbance ; chill, overexertion or nutritional influences may have been the causes.—R. Marshall.

Nadeau, J. D. (1946.) Déséquilibres nutritifs

chez les porcelets. [**Deficiency diseases in young pigs.**]—*Canad. J. comp. Med.* **10.** 195–205. [In French.] **1021**

This is a review of deficiency diseases due to lack of essential food substances in young pigs. It is pointed out that, while the various deficiency diseases are described as separate entities the syndromes seen in the field are often the result of multiple deficiencies. Reference is made to a vesicular type of dermatitis which N. believes to be due to an excess of animal protein in the diet, or, possibly, to toxic substances produced from animal proteins through the influence of heat and humidity. Such cases were cured by a vegetable diet. The importance of the sow's diet during pregnancy and lactation is emphasized.—R. G.

See also absts. **989** (vitamin B compler and cancer), **1075** (ley pastures), **1093, 1094** (synthetic nitrogen compounds as feeding stuffs).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

ROMIJN, C. (1942.) Over de specificiteit der roode bloedkleurstof bij het rund. Eerste mededeeling: Haemoglobine van foetus en volwassen rund. [**The specificity of the red blood pigment in bovines. I. The haemoglobin of the foetus and grown animal.**]—*Tijdschr. Diergeneesk.* **69.** 541–548 & 549. [English, French and German summaries.] [Abst. from English summary.] **1022**

The denaturation with alkali of haemoglobin from the bovine foetus and grown animal was studied by means of a sensitive photo-electric method. In the foetus, haemoglobin was denatured in a very short time, although by the last month of pregnancy it was found to have more resistance; haemoglobin from the adult animal was very resistant.

In studies with a quartz spectrograph of the absorption spectra of oxyhaemoglobin and carboxyhaemoglobin, the shift of the α-band to a lower wavelength was found to be greater for the foetal than for the adult haemoglobin.

HENDERSON, W. M. (1946.) **The prescapular lymph node of the ox and its relation to lymphatic drainage of the skin.**—*J. Anat.* **80.** 107–110. **1023**

100 Devon steers were injected intracutaneously at various sites on the neck, shoulder, thorax and forelimb in order to define the skin areas of lymphatics draining into the prescapular lymph node. 3–5 ml. of either indian ink or a 1% aqueous solution of trypanblue were used for injection and the cattle were killed at intervals varying from a few seconds to 24 hours after injection. The prescapular lymph node was then removed and recordings were made of the presence of the inoculum both in the node and in the skin routes leading to it. It was found that drainage from each skin region was restricted, in the main, to a particular portion of the node. In some cases, more than one section of the node was stained following a single injection and this was attributed to the greater distance from the node of the site of injection or the proximity of this site to a neighbouring skin area, both of which factors would allow of the chance of more anastomoses with adjacent vessels draining into different areas of the node. There is strong reason to suggest that the well marked trabeculae formation associated with this node in the ox serves to separate the lymphoid tissue into areas, each responsible for drainage from specific areas, although it cannot be said these sections are completely separated one from another. It is estimated that at least 200 afferent lymph vessels enter this node.

—C. W. OTTAWAY.

HOLMAN, R. L. (1946.) **Regeneration of lymphatic channels following ablation of lymph nodes.**—*Univ. N. Carolina Studies in Science.* pp. 157–164. Chapel Hill, N.C.: University of North Carolina Press. [Author's summary copied *verbatim*.] **1024**

The best method for studying the normal lymph flow, also for studying that established under pathological conditions, is the injection method in the living subject. The use of a blue or black dye is preferable as the contrast between the injected lymphatics and the blood vessels is sharper. Pontamine blue, trypan blue, and nigrosine have been found satisfactory for this purpose.

For all practical purposes the intracutaneous and especially the sub-cutaneous, injection of these dyes amounts to an intralymphatic injection.

When the dye is dissolved in water or in a saline solution, it diffuses out into the tissues within a few minutes thus blurring and obscuring the outlines of the lymphatics; but when homologous serum is used as the solvent, the dye remains sharply confined to the lymphatic channels for several hours, or until it has been washed out by the flow of lymph.

When dye dissolved in serum was injected in the loose subcutaneous tissue between the toes of 25 hind feet of 15 normal adult dogs, it was found that the main lymphatic trunks (which are outlined almost immediately by this procedure) invariably course over the dorsum of the foot and around the lateral aspect of the leg to enter the inferior pole of the popliteal lymph node.

When this same procedure was used in studying 54 hind legs of 34 adult dogs at post-operative intervals of 6 hours to 15 months after excision of the popliteal lymph node, the following results were obtained:

a. Lymph flow was invariably re-established after the 7th day. b. In the majority of instances the continuity of flow was re-established by "sprouting across the gap", but in 18 cases ($\frac{1}{3}$ of the total number, or 41% of the cases over 7 days) an unexpected pattern of regeneration took place. Instead of the normal pattern described above, in these 18 cases one or more channels arose from the main trunks which run over the dorsum of the foot, at the joint corresponding to the ankle, and coursed up along the medial aspect of the leg to rejoin the main trunks in the mid-thigh region. This unusual pathway is referred to as the "medial channel". c. A superficial skin plexus developed in 34 of the 44 cases studied after the 7th day. d. With time there is a tendency for the skin plexus to disappear, but the "medial channel" is apparently permanent.

From the data at hand it cannot be stated whether the "medial channel" represents a newly formed channel or is merely a pre-existing channel which opened up in response to the continued stress and strain following the operation.

The possible bearing of this unusual pattern of regeneration, which might be termed "collaterals arising from the next (distal) embryonic fold", upon phenomena found in human pathology is briefly discussed.

Nigg, M. (1944.) Beobachtungen aus der Praxis über Funktion des linken Ovars beim Rind. **[A practitioner's observations on the function of the left ovary in the cow.]**—*Schweiz. Arch. Tierheilk.* **86.** 434–436. **1025**

In the calf the ovaries are either the same size or the left is larger, but by the time the animal has reached maturity, the right ovary is generally the better developed. N. believes that in the cow the right ovary is dominant, the left functioning less efficiently. He has noted that in cases of pregnancy where the foetus is in the left horn of the uterus, the right ovary may exhibit cyclic changes during the first half of gestation. Similar cyclic changes were not observed in the left ovary when pregnancy was right-sided. Several other observations are cited from cases of infertility and abortion in support of this theory of the dominance of the right ovary.—A. T. C.

Pierre, M. (1943.) Endocrinologie ovarienne. **[Ovarian endocrinology.]**—*Rev. Méd. vét., Lyon et Toulouse.* **94.** 241–267. **1026**

P. reviews the growth of knowledge of ovarian physiology, the effect of ovariectomy, the action of ovarian grafts and extracts, the natural oestrogens and progesterone and their properties, the gonadotropic hormones and their effects on the ovaries, the mechanism by which sex hormones control sexual changes in the female and certain clinical changes which occur in animals and their treatment with sex hormones.—J. M. Robson.

Spörri, H. (1944.) Physiologische Wirkungen der weiblichen Sexualhormone. **[Physiological effects of the female sex hormones.]**—*Schweiz. Arch. Tierheilk.* **86.** 449–462 & 499–508. **1027**

This is a concise review of the physiology of the "female" sex hormones.

The article is of special interest in that it contains references to papers which have not been generally available in this country and S.'s views on certain aspects of hormone therapy are unfamiliar and refreshing.—Alfred T. Cowie.

Sokolowskyj, W. (1944.) Zur Morphologie der Nebenniere beim Schwein. **[Morphology of the adrenal glands of the pig.]**—*Berl. Münch. tierärztl. Wschr./Wien. tierärztl. Mschr.* Sept. 15th. 299. **1028**

S. describes a bilobed left adrenal gland of a pig, which on sectioning revealed a continuity of medullary tissue between the lobes. The right gland showed irregularity of growth, but in this instance the medullary substance was confined to one area of the gland and was not involved in the irregularity.—C. W. Ottaway.

See also absts. **989** (oestrogens), **1012** (placental permeability), **1018** (parathyroids).

POISONS AND POISONING

Oppermann, T. (1944.) Ein Beitrag zur Klärung der Ursache des "plötzlichen Herztodes" der Schweine. **[The cause of sudden fatal syncope in swine.]**—*Dtsch. tierärztl. Wschr./Tierärztl. Rdsch.* **52/50.** 49. **1029**

Zinc poisoning from food kept in zinc containers may be the cause of sudden fatal syncope in swine. The higher incidence of the disease in the summer may be due to solution of zinc by sour milk.—E. Kodicek.

Kingscote, A. A., & Jarvis, C. H. (1946.) **Report upon experiments conducted to establish the tolerance of turkeys to DDT.**—*Canad. J. comp. Med.* **10.** 211–218. [French summary p. 236.] **1030**

It was found that large quantities of 5–10% D.D.T. preparations ingested, inhaled or dusted on birds caused casualties. Oily preparations were more toxic than non-oily ones. 1 g. of 75% D.D.T. administered orally in vegetable or animal

oil per lb. body weight caused severe symptoms of poisoning, with high percentage of recovery in six-month-old birds, but in young turkeys mortality was 90%. Young birds were not affected when placed in a box, newly painted with a commercial D.D.T. paint [composition not stated]. The symptoms of poisoning in grown turkeys were marked dyspnoea and tremors. Usually, young birds died without marked manifestations. In acute poisoning there were no specific macroscopic or microscopic lesions. Preliminary work indicated that calcium levulinate given intravenously arrested symptoms of acute D.D.T. poisoning.—P. J. G. PLUMMER.

JONES, M. A., GERSDORFF, W. A., & MCGOVRAN, E. R. (1946.) **The toxicological comparison of *Derris* and *Lonchocarpus*.**—*J. econ. Ent.* **39.** 281–288. **1031**

In comparing the chemical criteria of rotenone roots with the toxicological values, the colorimetric determination of rotenone plus rotenoids gives the best chemical estimation of a sample, although it may vary considerably from the biological evaluation.

Of a number of roots examined by biological methods, the Sarawak Creeping and the high-rotenone Changi No. 3 varieties of *Derris* were the best for the production of insecticidal material.

Lonchocarpus varieties evaluated on similar rotenone basis were much inferior in insecticidal value.—W. MOORE.

See also absts. **1032** (toxicity of calcium chloride), **1057** (of D.D.T.).

PHARMACOLOGY AND THERAPEUTICS

DURLACHER, S. H., HARRISON, W., Jr., & DARROW, D. C. (1946.) **The effects of calcium chloride and of calcium lactate administered by gavage.**—*Yale J. Biol. Med.* **18.** 135–143. [Authors' summary and conclusions copied *verbatim*.] **1032**

Necrosis and ulceration of the stomach, and in one instance of the small intestine, occurred in two infants who died after receiving calcium chloride by gavage. Similar lesions were reproduced in rabbits with comparable and with smaller doses of calcium chloride. Equivalent and larger doses of calcium lactate produced no anatomical changes in rabbits. The latter salt administered to six newborn infants was effective in raising the serum calcium.

Calcium chloride, as commonly recommended, is damaging to the stomach and intestines. Its administration by gavage to new-born infants is contraindicated.

PFEILER, F. (1944.) Bienenhonig als Herzmittel. [**Bee honey as pressor agent.**]—*Berl. Münch. tierärztl. Wschr./Wien. tierärztl. Mschr.* June 9th. 188–189. **1033**

Glucose injections are frequently used in heart therapy and since honey may contain as much as 35% glucose and has been used in folk medicine for heart troubles, its effect upon heart activity was studied.

An isolated frog's heart was perfused with oxygenated Ringer's solution and the contractions were recorded on a drum. Potassium chloride added to the perfusion fluid caused weakening or even cessation of the heart beats, and honey, perfused in a concentration of 1 : 10, 1 : 20, or even 1 : 50 revived the heart activity, when simple washing away of the potassium ion had no effect. Glucose, in equivalent concentrations, had a similar, but less regular, ameliorative effect.

When a frog's heart was laid bare *in situ* and sprinkled with potassium chloride to reduce its activity, honey injected *per rectum* had a remarkable effect, restoring even an inactive heart. Equivalent concentrations of glucose were not so effective and synthetic honey was almost without effect. It seems that natural honey contains some substance other than glucose which has a stimulating action upon the heart.—R. MARSHALL.

CRUICKSHANK, R. (1946.) **Chemoprophylaxis in the control of bacterial infections.**—*Mon. Bull. Min. Hlth Emerg. publ. Hlth Lab. Serv.* **5.** 144–149. **1034**

Prophylactic dosings of 0·5 g. sulphadiazine twice daily were of value in preventing the spread of streptococcal infections in epidemics. Such treatment was also of value in preventing spread of rheumatic fever and cerebrospinal meningitis, but not pneumococcal respiratory infections. Succinylsulphthiazole may be used as a prophylactic against dysentery, mepacrine for Giardia enteritis and streptomycin for salmonella infection.—E. BOYLAND.

—. (1945–46.) **The international standard and unit for penicillin.**—*Bull. Hlth Org. L. o. N.* **12.** 181–298. **1035**

This is an account of the International Conference on the Standardization of Penicillin, held in London, in October, 1944. An International Unit was defined as 0·6 μg. of the International Penicillin Standard or 2·7 μg. of the International Penicillin Working Standard. Six preparations of penicillin were assayed in four British, one Canadian and three U.S. laboratories and the results agreed satisfactorily. The modes of assay are described, including the early methods, the cylinder plate methods, the dilution method, the

plate droplet method and the broth dilution method.—E. BOYLAND.

TILLEY, F. W. (1945.) **The influence of changes in concentration and temperature upon the bactericidal activity of formaldehyde in aqueous solutions.**—*J. Bact.* **50.** 469–473. **1036**

At 30°C., 1 : 25 aqueous formaldehyde is bactericidal to *Staph. aureus* in 15 min. and 1 : 600 in 280 min. Intermediate values are given by the equation :–

$$n = \frac{\log t_2 - \log t_1}{\log C_1 - \log C_2},$$

in which n is termed the concentration exponent and is 1·0 for *Staph. aureus*, 1·1 for *Bact. coli* and 1·0 for *S. typhi*. The disinfection time (t) increases approximately threefold for every 10°C. temperature drop. In the case of gaseous formaldehyde there is a tendency for the gas to condense to the comparatively inert solid form in cold weather, which makes its use unreliable at a temperature below 65°F. [18·3°C.].—R. SCARISBRICK.

RAAB, W. (1946.) **Antibacterial action of phenanthrene - related substances.** — *Science.* **103.** 670–671. **1037**

Vitamin D, ergosterol and cholesterol inhibit the growth *in vitro* of *Staph. aureus* and *M. tuberculosis*. In preliminary experiments, large doses of vitamin D (viosterol, 5,500,000 units D) suppressed TB. in g. pigs.—R. SCARISBRICK.

WAKSMAN, S. A., & REILLY, H. C. (1944.) **Bactericidal action of antibiotic substances.**—*J. infect. Dis.* **75.** 150–159. **1038**

Antibiotic substances which have a high bacteriostatic activity against certain bacteria also exert bactericidal action against the same organisms. Some antibiotic substances fail to inhibit the growth of all the bacterial cells in a given population and this leads to gradual adaptation of surviving cells to the antibiotic. Other substances destroy all the bacterial cells in a given population. The selective actions of different antibiotics on different groups of bacteria are of value in studying the biochemical characteristics of the organisms and ultimately reveal differences of a more fundamental nature than those shown by staining techniques (*e.g.*, by the Gram stain).—J. M. R.

SALTER, W. T. (1944.) **Antibiotics and bacteriostatics in blood and body fluids.**—*New Engl. J. Med.* **231.** 651–656. **1039**

The importance of estimating the concentration of chemotherapeutic substances in the body fluids in order to use them effectively is stressed. Without this precaution it cannot be concluded that a therapeutic substance under test is ineffective, nor can toxic concentration be avoided on occasions. The distribution of sulphonamides, mepacrine, quinine and penicillin in body tissues and fluids is discussed and methods of estimating them are described.—J. M. ROBSON.

GAÚSE, G. F. (1946.) **Gramicidin S. Review of recent work.**—*Lancet.* **251.** 46–47. **1040**

G. reviews work carried out in Russia on gramicidin S, an antibiotic produced by a strain of *B. brevis*. Gramicidin S accelerates the epithelization of wounds and reduces suppuration ; it kills most strains of *Bact. shigae*, but very few strains of *S. paratyphi-A* and no strains of *S. typhi*, *S. paratyphi-B*, *S. enteritidis* or *Proteus morgani A* and *B*. It has been used to destroy bacteria present in glycerinated cow pox vaccine.—E. B.

KIRBY, W. M. M. (1945.) **Properties of a penicillin inactivator extracted from penicillin-resistant staphylococci.**—*J. clin. Invest.* **24.** 170–174. **1041**

A penicillin inactivator could be isolated from seven resistant strains of staphylococci by acetone extraction. The same process yielded no inactivator when applied to seven sensitive strains of staphylococci.—E. BOYLAND.

KIRBY, W. M. M. (1945.) **Bacteriostatic and lytic actions of penicillin on sensitive and resistant staphylococci.**—*J. clin. Invest.* **24.** 165–169. **1042**

The action of penicillin was followed *in vitro* on 100 sensitive and eight resistant strains of *Staph. aureus*. The rate of lysis of the organisms was dependent on the penicillin concentration and on the size of the inoculum. In a few cases secondary outgrowths of resistant organisms occurred following lysis of sensitive organisms.
—E. BOYLAND.

WATTS, P. S., & MCLEOD, D. H. (1946.) **The estimation of penicillin in blood serum and milk of bovines after intramuscular injection.**—*J. comp. Path.* **56.** 170–179. **1043**

Of 60 strains of *Str. agalactiae* and *Staph. aureus* isolated from cases of bovine mastitis, all were as sensitive to penicillin as the Oxford standard staphylococcus. Penicillin can be estimated by its inhibitory action on growth of staphylococci in litmus milk over a three day incubation period. Fresh serum appeared to contain a heat labile substance which neutralizes penicillin. With intramuscular injection of up to 1,000,000 Oxford units into cows no penicillin can be detected in milk. The injection of 500,000 and 1,000,000 units gives the same serum concentrations 30 min. after injection.—E. BOYLAND.

BERTHELON, M. (1941.) Le traitement des mammites de la vache. [**The treatment of bovine mastitis.**]—*Rec. Méd. vét.* **117.** 375–382. **1044**

For the treatment of various clinical forms of mastitis, B. describes the methods to be recom-

mended from those in use at the time the article was written. Amongst these is the use of acridine derivatives (entozon, gonacrine) intravenously in cases of mastitis due to *Bact. coli*; together with calcium injections if any paraplegic symptoms are associated with the condition.—E. COTCHIN.

JOHNEN, F. J. (1944.) Die Bekämpfung der Fohlenlähme mit Eleudron. **[Treatment of joint-ill in foals with eleudron (sulphathiazole).]** —*Dtsch. tierärztl. Wschr./Tierärztl. Rdsch.* **52/50.** 326–328. **1045**

The preparation (presumably of sodium sulphathiazole) was given intravenously, or orally or both, as a 20% solution. J. states that a favourable effect was produced in 17 out of 25 animals. Several animals died. There were no controls and many animals received other treatments in addition to sulphathiazole.—J. M. R.

KORNEV, N. E., & VOLKOV, V. V. (1941.) Opyt primeneniya streptotsida v veterinarnoĭ praktike. **[Sulphanilamide in veterinary practice.]**—*Trud. XV Plen. vet. Sekt. Akad. sel'khoz. Nauk, Moscow, 1939* [*Diseases of Horses*]. pp. 272–275. **1046**

Good results were obtained when a 0·25% solution of "red streptocid" [azosulphamide] was injected intravenously in repeated doses of 250–500 ml. in five horses with complicated strangles, in two with streptococcal lymphadenitis, and in six with various surgical conditions, such as fistulas, wounds, etc.—A. MOLDAWSKY.

MILLER, E. S., SCOTT, E. B., NOE, H. A., MADIN, S. H., & HENLEY, T. F. (1946.) **Chemotherapy of experimental anthrax infections.**—*J. Immunol.* **53.** 371–379. **1047**

Streptomycin, penicillin and sodium sulphadiazine were tested for their chemotherapeutic action in experimental anthrax infections in white Swiss mice. The drugs were administered 24 hours after the infective inoculations of anthrax spores and the survival rates estimated after 28 days. Under the conditions employed maximal survival rates of 92% were obtained with streptomycin, 58% with penicillin and only 5% with sulphadiazine.—R. R. A. COOMBS.

CUTTING, W. C., GEBHARDT, L. P., PROESCHER, F., DURRUM, E., & MOY, H. B. (1945.) **Chemotherapy in experimental tuberculosis. Tests *in vitro* and *in vivo* with different types of agents.** —*Amer. Rev. Tuberc.* **52.** 73–82. [Spanish summary.] **1048**

Three hundred compounds were tested *in vitro* for inhibition of human tubercle bacilli on a solid medium and those inhibiting in concentrations of 10 mg. or less per 100 ml. were used for *in vivo* tests in g. pigs. Diverse groups of compounds were examined, including sulphonamide, phenothiazine and acridine derivatives, sulpholanyls, plasticizers, organo-metallic compounds, dyes and a number of common organic chemicals, such as saccharin and salicylaldehyde.

Of those compounds selected for *in vivo* testing, slight and irregular suppression of tuberculous infection was obtained with neosynephrine sulphathiazolate, diasone and with a combination of sulphadiazine and propylene glycol. In no case was disease completely eliminated, and in control animals occasional spontaneous suppression occurred. Ethyl chaulmoograte was highly active *in vitro*, but completely inactive *in vivo*.

—ALEX. B. PATERSON.

FREEDLANDER, B. L. (1944.) **The chemotherapy of benzophenone and allied compounds. II. Further experiments on tuberculostatic action *in vitro*.**—*Amer. Rev. Tuberc.* **49.** 543–548. [Spanish summary.] [For previous article, see *V. B.* **13.** 348.] **1049**

Sixty-seven derivatives of benzophenone and other ketones were examined for tuberculostatic activity *in vitro*. The most active compounds were some chloro-derivatives of benzophenone, thio-benzophenone and phenyl *n*-hexyl ketone; these substances inhibited growth at concentrations of 1·0 mg., 2·5 mg. and 2·5 mg. % respectively.—ALEX. B. PATERSON.

MOREAU, A. B. (1943.) Diarrea de los terneros. **[Calf diarrhoea.]**—*Agronomia, Lima.* **8.** No. 32. 54–58. **1050**

M. discusses briefly the symptoms of different types of diarrhoea in calves and their treatment. Pasteurella antiserum is recommended for the treatment and prevention of infectious calf scours.

Diarrhoea which is due to gastric disturbances can be treated in various ways by injections of sterilized milk, by administration of creoline-Pearson [a cresol preparation] or lactic acid.

For diarrhoea caused by coccidia, injections of 20–50 ml. of dysentery antiserum and dosing with tannin or tannoform are recommended.

For diarrhoea due to enteritis, a soln. of 10 g. of iodine, in 300 ml. of distilled water containing 10 g. of potassium iodide is used. 25 ml. of this solution are added to 1 litre of distilled water, and injections of 30–40 ml. of the diluted solution are given.—J. H.

STOLZ, A. (1943.) Therapeutische Beeinflussung experimenteller Gasödeme mit einem Sulfonamid (Mesudin-Marfanil). **[Treatment of gas gangrene with marfanil.]**—*Dtsch. tierärztl. Wschr./Tierärztl. Rdsch.* **51/49.** 205–207. **1051**

Experiments were performed on g. pigs injected with anaerobes (*Cl. septicum*). The drug was given orally, subcutaneously, intramuscularly and intra-abdominally, in repeated doses. The

best results were obtained with a combined intra-abdominal and intramuscular therapy (16 doses by each route within 72 hours). A few experiments on other animals are also reported.

—J. M. Robson.

Baber, M. D., & Stuart, R. D. (1946.) **Leptospirosis canicola. A case treated with penicillin.** —*Lancet.* **251.** 594–596. **1052**

A case of human *Leptospira canicola* infection occurring in Great Britain is recorded, the nature of the organism having been determined by serological investigations. The infection appeared to have been contracted by bathing in the Thames, as there was no history of close contact with dogs. The usual symptoms of mild meningitis occurred, and in addition the urine contained visible blood and much albumen, with numerous cellular and granular casts, but no organisms.

Treatment consisted of an intrathecal injection of 10,000 units of penicillin, followed by the same dose intramuscularly every three hours for three days. Recovery was spectacular, but it is pointed out that a similar clinical course may occur without treatment.—U. F. Richardson.

Schermer, S. (1944.) Die Anwendung von Sulfonamiden bei der Bekämpfung der Pferdegrippe (anst. Katarrh der Luftwege). [**Use of sulphonamides in the treatment of equine influenza (infectious bronchitis).**]—*Berl. Münch. tierärztl. Wschr./Wien. tierärztl. Mschr.* March 31st. 101–105. **1053**

Eubasin [sulphapyridine] and cibazol [sulphathiazole] administered orally, eleudron [sulphathiazole] administered intravenously or intramuscularly, and B–1105 (I.G. Farben), administered intravenously, intramuscularly or subcutaneously were found to be therapeutically efficient.—J. Z.

Meiklejohn, G., Wagner, J. C., & Beveridge, G. W. (1946.) **Studies on the chemotherapy of viruses in the psittacosis-lymphogranuloma group. I. Effect of penicillin and sulfadiazine on ten strains in chick embryos.**—*J. Immunol.* **54.** 1–8. **1054**

Wiseman, R. W., Meiklejohn, G., Lackman, D. B., Wagner, J. C., & Beveridge, G. W. (1946.) **Studies on the chemotherapy of viruses in the psittacosis-lymphogranuloma group. II. Effect of penicillin and sulfadiazine on seven strains in mice.**—*Ibid.* 9–16. **1055**

I. Penicillin delayed the death of embryos injected with each of ten viruses tested. Sodium sulphadiazine had a similar effect against only two classical strains of psittacosis virus, mouse pneumonitis virus (Greb strain) 12 N strain, and lymphogranuloma venereum virus and failed to delay death of embryos injected with five other strains.

II. Penicillin had a therapeutic effect when injected subcutaneously into mice infected with each of five viruses. Oral sulphadiazine was effective in mice infected with three viruses, but ineffective in other virus infections. All the results were in agreement with those obtained in chick embryos.—J. M. Robson.

Andrews, H. L., White, W. C., Gamow, L. R., & Peterson, D. C. (1946.) **Some physical properties of DDT and certain derivatives.**—*Publ. Hlth Rep., Wash.* **61.** 450–456. **1056**

The ultra-violet and infra-red absorption spectra and the X-ray diffraction patterns of D.D.T. and of four synthetic derivatives of importance in studies of the mode of action and fate of ingested D.D.T., are described and applied to the detection of low concentrations.

The four derivatives were 2,2-bis(*p*-chlorophenyl)1,1-dichlorethylene; di(*p*-chlorophenyl) acetic acid, 4,4′-dichlorodiphenylmethane, and p,p′-dichlorobenzophenone.

For ultra-violet absorption spectroscopy, determinations were made using a Beckman spectrophotometer with 2,2,4-trimethyl pentane (iso-octane) as the solvent. The maximum values of molecular extinction fall within a narrow range and hence the lower limits of detection are nearly the same for each of the pure compounds; for D.D.T., using the main band of 237·5 mμ in the absence of interfering substances, 0·5 μg. can be detected and 3·0 μg. accurately measured.

For some combinations, notably the ketone and D.D.T., the components of a mixture can be separated, but for other combinations separation is impossible.

The infra-red spectra were taken in a Perkin-Elmer model 12A infra-red spectrometer with a double passage of light through a 60° sodium chloride prism. All measurements covered the wave-length range of 1–13μ. Carbon tetrachloride as a solvent was used for 1–8μ and carbon disulphide from 7–13μ. The 9·2μ band was found to offer the best possibility for the detection of D.D.T. in the absence of the interfering substances. From the intensity of this band it appears that about 200 μg. of D.D.T. are required for measurement. The limits of detection for the other four compounds vary somewhat but are of the same order of magnitude as for D.D.T. There are enough differences between the absorption curves to permit the determination of any one of the five compounds in the presence of any combination of the others.

The X-ray diffraction pattern of D.D.T. is of sufficient intensity to permit its identification in a dust sample when present in a concentration of 10% or more. The actual amount of D.D.T. detectable by its diffraction pattern is about 1 mg.

The other compounds can be detected in somewhat smaller concentrations.—H. PAVER.

LAUG, E. P., & FITZHUGH, O. G. (1946.) **2,2-bis (p-chlorophenyl)-1,1,1-trichloroethane (DDT) in the tissues of the rat following oral ingestion for periods of six months to two years.**—*J. Pharmacol.* **87.** 18–23. **1057**

Rats receiving 800 and 1,200 p.p.m. D.D.T. in their food for a period of six months showed a marked depression of growth compared with suitable controls consuming the same amounts of food, and characteristic symptoms of poisoning were observed with fatal terminations, in some cases. The weights of the livers and kidneys of these animals receiving D.D.T. showed average increases of 43% and 19% respectively above those of the controls, and the O_2 consumption of slices of the liver tissue were about 40% below those of the controls.

Other groups of rats were fed *ad lib.* diets containing 100, 200, 400 and 800 p.p.m. D.D.T. for periods up to two years. The drug was found in all tissues and the concentration in the perirenal fat was about 50 to 100 times as great as in other tissues. The D.D.T. content of tissues other than muscle appeared to be related to their fat contents; in fatty tissue the concentration of D.D.T. was corelated with the level in the diet over the ranges 100 to 800 p.p.m. The rat did not distinguish between para-para and ortho-para isomers of D.D.T. but laid them down in the same proportions as those they were fed in the diet.—A. EDEN.

MATTHYSSE, J. G. (1945.) **Grub control on dairy cattle in the northeast.**—*J. econ. Ent.* **38.** 442–446. **1058**

A dust consisting of one part cubé (4·2% rotenone) and three parts pyran A.B.B. (pyrophyllite) when sifted onto cattle from powder casters gave 80% kill of all larvae in both the second and third instars. Two treatments given in early April and early May were found to be adequate. "Gadding" was not observed until late in the season and may have been caused by late-emerging warbles which had escaped treatment. Increase of the cubé content gave results only a little better. Substitution of wettable sulphur as a diluent gave results inferior to those obtained with pyrophyllite.

Spraying of the legs and undersides of cattle with emulsions, solutions or suspensions of D.D.T. in concentrations of 2–5% gave no protection against oviposition by the flies and subsequent penetration of the larvae. A year later, there was no significant difference in the numbers of warbles carried by treated and untreated control cattle.—T. SPENCE.

VEENENDAAL, H. (1942.) Nog eens hexylresorcine als anthelminthicum voor den hond. [**Hexylresorcinol as an anthelmintic for dogs.**]—*Tijdschr. Diergeneesk.* **69.** 622–623. [English, French and German summaries: abst. from English summary.] **1059**

The anthelminthic, hexylresorcinol, is reported to have a caustic action on the skin and mucous membranes.

WEHR, E. E., & OLIVIER, L. G. (1946.) **Limitations of phenothiazine in the control of cecal worms and blackhead disease of turkeys.**—*Poult. Sci.* **25.** 199–203. **1060**

Three experiments were carried out in which young turkeys and chickens were placed together in pens, the soil of which was heavily contaminated with eggs of *Heterakis gallinae*. The birds in each experiment were divided into two groups, one receiving 1% or 2% phenothiazine in their mash for 4–6 weeks and the control group being fed plain mash. In two of the experiments, there was no significant difference in the number of deaths from blackhead in the treated and control groups, while in the third, the number of deaths in the treated group was only about half that in the control group.

P.M. examination was carried out in every case, including the surviving treated birds and the controls, in order to estimate the degree of caecal worm infestation. These examinations showed that although phenothiazine did not prevent *Heterakis* infection, it did result in expulsion of the worms before or soon after they reached maturity. No mature caecal worms were found in any of the groups of turkeys, but the total number of immature worms removed at autopsy from the treated birds was about one-third of that removed from the control birds.

The authors concluded that phenothiazine treatment had no effect on the incidence of blackhead amongst these turkeys.—J. D. BLAXLAND.

KUHNA, J. (1943.) Versuche zur Dosierung der Extraduralanästhesie bei Pferden unter besonderer Berücksichtigung der Erhaltung des Stehvermögens. [**Dosage tests with extra-dural anaesthesia of horses, with particular reference to the retention of power to stand.**]—*Arch. wiss. prakt. Tierheilk.* **78.** 245–287. **1061**

K. traces the history of extradural anaesthesia in man and the horse from 1901 onwards and describes the technique for injection.

The description and results of tests on 35 horses using solutions of different concentrations of tutocain are given in detail. Trials were made with doses to obtain sufficient anaesthesia for gynaecological manipulation without causing loss of power of the hind quarters. The dose was based on the height of the horse measured in cm. With 0·5–

1·0% tutocain solutions a suitable dose amounted to one-tenth of the height measured in ml. With a 2% solution the maximum dose was 15 ml. The spread of the injection influenced the spread of the anaesthesia. The quicker the injection, the further forward the liquid passes towards the cranium.—N. Corcoran.

Hilbert, D. N., & Laizet, M. (1942.) Traitement de la dourine. **[The treatment of dourine.]** —*Rec. Méd. vét.* **118.** 292–295. **1062**

In an outbreak of dourine in Algeria in 1938 some 20 mares, 7 mules and 4 donkeys were infected. They were treated with a dose of about 15 g. novarsenobenzol, repeated after 16–24 hours. Symptoms of shock followed the second injection only. The symptoms of dourine disappeared completely. During the following three years' observation the animals remained healthy and repeatedly reacted negatively to the formol-gel test whilst intratesticular inoculation of their blood into rabbits produced no reaction. Breeding from the mares proceeded normally and an uninfected stallion which was used remained free from the disease.—S. J. Gilbert.

Brion, A. (1945.) Traitement des coliques du cheval par les injections intraveineuses du novocaïne. **[The treatment of colic in the horse by intravenous injection of novocaine.]** —*Bull. Acad. vét. Fr.* **18.** 284–288. **1063**

Many cases of colic in the horse, due primarily to spasm of pyloric or intestinal musculature from parasympathetic excitation, can be successfully relieved by an early intravenous injection of novocaine, which inhibits the autonomic nervous system. The drug is injected slowly in aqueous solution at a rate of 0·10–0·12 g. per 100 kg. body weight. The effect, if any, will be apparent within 10–15 min. Four illustrative case histories are given. The drug is of no value in the treatment of colic due to intestinal obstruction, volvulus or invagination.—E. Cotchin.

See also abst. **926** (erysipeloid).

Cantonnet, P., & Fouchier, J. (1945.) Nouveau traitement de la pousse du cheval. **[A new treatment for " broken wind " in horses.]** —*Bull. Acad. vét. Fr.* **18.** 195–201. **1064**

A method of treatment of " broken wind " is described, which is based on its use in cases of asthma associated with alveolar emphysema in man. Four horses were treated and each was able to work without respiratory distress within a short time. The treatment involves the daily intravenous injection, for a few days, of the alcohol octanol and of a solution of magnesium hyposulphite and calcium chloride, together with subcutaneous injection of " polypeptone iodeé " and autohaemotherapy.

The original article should be consulted for details of the dosages used in the different cases and for a discussion of the theoretical considerations upon which the treatment is based. While the number of cases so far treated is small, the method seems worth an extended trial.—E. C.

Nörr, J. (1943.) Methylenblau—ein gutes Heilmittel bei verschiedenen Hautkrankheiten, bei Tonsillitis und bei Geflügeldiphtherie. **[Methylene-blue—a useful remedy in various skin diseases, in tonsillitis and in avian diphtheria.]**—*Berl. Münch. tierärztl. Wschr./Wien. tierärztl. Mschr.* Oct. 1st. 338–341. **1065**

Medicinal methylene-blue in 2% aqueous or alcoholic solution, applied locally, is recommended in many skin conditions including demodectic mange, all kinds of eczema, particularly wet eczema, acne, herpes, and in tonsillitis and pharyngo-tonsillitis. It is recommended too for the treatment of necrosis of the tongue, skin and mucosae.

The solutions can be used as a local application for the lesions of avian diphtheria and may be given with advantage in the drinking water. Methylene-blue solution is harmless, easily obtainable and cheap.—I. W. Jennings.

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

Winther, O., & Hansen, A. C. (1943.) Laboratoriekontrollen og Krisebestemmelserne vedrørende tilberedte Kødvarer. **[Laboratory control and wartime regulations concerning meat inspection.]**—*Maanedsskr. Dyrlaeger.* **55.** 141–165. **1066**

Methods of examining samples of liver pudding, sausages and forced meat to determine whether they conform to the regulations governing the proportion of liver, fat, flour and other constituents are described.—H. C. Bendixen.

Larsen, S. (1940.) Meddelelse fra praktisk Kødkontrol. Samlestald-Hepatitis. **[Meat inspection communications. Hepatitis in pigs lodged at the abattoir before slaughter.]**—*Maanedsskr. Dyrlaeger.* **52.** 385–388. **1067**

After the beginning of the German occupation of Denmark in 1940 pigs were required to be held at abattoirs for 24 hours before slaughtering. As a result of this procedure many of the slaughtered animals had a greyish-yellow liver and kidneys, this fatty degeneration being some-

times rather severely pronounced and accompanied by slight icterus. The procedure of holding the animals before slaughter is criticized. —H. C. BENDIXEN.

CHADHA, S. R. (1945.) **Restrictions on the slaughter of cattle in Bombay.**—*Indian Fmg.* **6.** 474–475. **1068**

By implementation of the Government order to prevent the slaughter of animals belonging to such categories as healthy draught bullocks below ten years old, cows in calf and cows in milk, about 6% of the total of 202,420 cattle tendered for slaughter might be saved.—M. P. JOHARI.

VAN OIJEN, C. F. (1941.) Over de vervanging van agar door kiezelzuurvoedingsbodem, bij het quantitatief bacteriologisch melkonderzoek. **[Substitution of a silicate medium for an agar medium in bacteriological examination of milk.]** —*Tijdschr. Diergeneesk.* **68.** 1047–1051. [English, French and German summaries: English summary slightly amended.] **1069**

A silicate medium with a meat extract base successfully replaced the more usual agar medium with broth base for the plate count of fresh and pasteurized milk.

—. (1945.) **Veterinary Service [U.S.A.A.V.C.]**—*Bull. U.S. Army Med. Dep.* **4.** 364–368. **1070**

The Army Veterinary Corps inspected 8,000,000,000 lb. of meat, meat food and dairy products, including milk, butter and cheese and powdered eggs and poultry in 1944. Only 0·75% were rejected because of insanitary or unsound condition. The amount of food inspected was an increase of 155% over that for 1942 and 35% greater than in 1943. Difficulties arose in obtaining the greatly increased amounts of food required and in providing the veterinary staff needed for its inspection. Of the large amounts of food accepted, only 0·68% was condemned between the time of purchase and the actual issue to troops. In foreign theatres of war, only 1·2% was condemned, despite the adverse conditions of storage.

The use of ANTHRAX vaccine prevented loss among army animals in areas where the disease occurred. Routine use of mallein testing prevented loss from GLANDERS. Routine use of tetanus toxoid almost entirely prevented loss from TETANUS. In overseas commands the animal disease problems were more numerous. In India and Burma, SURRA, due to *Trypanosoma evansi*, was at first treated with antrypol, but owing to its toxicity the newer compound *p*-arsenosophenylbutyric acid was tried out. [No results of this are given.] In the U.S.A. all army equines were given EQUINE ENCEPHALOMYELITIS vaccine annually and no animals died of this disease. In the China theatre of operations the greater use of animals for transport and the serious shortage of Chinese veterinary personnel made the problem of animal disease control much more difficult. The U.S.A.A.V.C. undertook the re-establishment of the Chinese Veterinary Service and the initiation of animal disease control.—J. A. GRIFFITHS.

WEBER, E. (1944.) Die Lehrer der Tierheilkunde an der Universität in Jena. **[Lecturers on veterinary medicine at the University of Jena.]** —*Berl. Münch. tierärztl. Wschr./Wien. tierärztl. Mschr.* June 9th. 193–194. **1071**

This is a list, with brief personal notes, of the agricultural school at Jena, where elementary veterinary science has been taught since 1778. A veterinary clinic had operated from about 1850 onwards. The present (1943) holder of the post is Dr. Goerttler.—J. E.

*SCHNYDER, O. (1943.) Die veterinärmedizinische Fakultät Zürich. **[The Faculty of Veterinary Medicine, Zurich.]**—*Festschr. 100 J. Zürcher landw. Kantonalverein 1842–1942.* p. 8. Zurich: Jacques Bollmann. [Abst. from abst. in *Schweiz. Arch. Tierheilk.* **85.** 430.] **1072**

S. describes the condition of veterinary medicine before the founding of the veterinary schools and gives an account of the organization and development of the veterinary school in Zurich, which was founded in 1820 and became a faculty of the University in 1901.—G. HUEHNS.

See also absts. **923** (milk tests), **934**, **935** (salmonella in hens' and ducks' eggs), **939** (brucellosis and milk), **971-973** (psittacosis), **1097** (the milk industry).

LIVESTOCK HYGIENE

LARSEN, S. (1941.) Ydre Paavirkninger som Aarsag til Beskadigelser hos Slagtesvin under Transport og Opstaldning før Slagtningen og Midler derimod. **[External causes of injury to swine during transport and passage before slaughter.]** —*Maanedsskr. Dyrlaeger.* **53.** 33–45. **1073**

The action of light, heat, cold, frost, and trauma on swine before slaughter are mentioned. Erythema due to sunburn is not important, because in most cases swine recover before slaughter. Sunstroke is often the cause of death or emergency slaughter of pigs on arrival at the abattoir: in such cases extensive degenerative alterations in the muscles and organs often cause the carcasses to be condemned.

In erythema caused by cold or frost, the skin is more or less scarlet after slaughter and must be peeled off before the carcass is passed. Contusions, wounds, fractures, etc., can be caused by pushes, pressure, hitting, fighting, etc.: many

pigs are disposed to fractures because of bone weakness. It is emphasized that proper and suitable treatment of the animals during all phases of transportation will prevent most of these injuries. Irritations of the skin can be caused by overcrowding the pigs at the abattoir, so that they rub and squeeze each other. There are several reasons why the pigs should be slaughtered immediately after the arrival. If not, they should be housed in small pens with sufficient litter.

—H. C. BENDIXEN.

—. (1945.) **Farm buildings.**—*Post-War Buildings Studies.* No. 17. pp. 208. London: H.M. Stat. Off. 3s. **1074**

This is the report of a committee appointed by the Minister of Agriculture in November, 1942, " to consider and make recommendations regarding the layout, design, and construction of farm buildings after the war ".

The general part of the report considers the basic requirements of farm buildings and their design, methods of construction, materials and the principles involved in the accommodation of livestock. Particular emphasis is placed on the need for an advisory service dealing with the problem which should correlate existing information and arrange for its dissemination, and conduct experiments on design, layout, equipment, materials and systems of working, with particulars of their cost.

Attention is drawn to the lack of knowledge about the requirements of farm animals for bodily comfort and health, such as the humidity, ventilation and light needed. Research is required on these problems.

In part II detailed consideration is given to the layout of the farmstead. Buildings for cattle, horses and pigs are discussed.

Chapter 9, probably the most exhaustive part of the report is devoted to buildings for dairy stock. Many architectural plans, figures and illustrations are given and these in some respects are the most valuable feature of the bulletin. A useful chapter describes the improvisation of buildings for the immediate post-war period and includes suggestions for the use of baled straw in constructing stock yards, piggeries and temporary sheds.

Part III is concerned with the exclusion of vermin and insect pests, fire prevention, and electricity on the farm.

The report is an excellent statement of current up-to-date practice in farm building construction under the varying conditions of farming in this country. In criticism it might be said that not enough attention has been paid to farm accommodation developments in other countries and what could be learnt from them. This may have been unavoidable owing to wartime circumstances, although the recommendation is made that representatives be sent abroad to study such developments. [This advice has been acted on: see " Farm Buildings in North America ". (1946.) *Agric. Overseas.* Rep. No. 2.]

The report should be in the hands of all those interested in this extremely important subject.

—D. L. HUGHES.

—. (1944.) **Pasture improvement and alternate husbandry in relation to animal health. Discussion by the Central Veterinary Society.** [Speakers :– STAPLEDON, G., HOSIER, A. J., TAYLOR, E. L., SMYTHE, R. H., WOOLDRIDGE, G. H., TODD, F. A., GORDON, W. S., HARE, T., MONTGOMERIE, R. F., EDWARDS, J. T., WOOLDRIDGE, W. R., & EDWARDS, S. J.]—*Vet. Rec.* **56.** 185–188 & 195–198. **1075**

STAPLEDON described how a permanent pasture differs from a temporary ley in respect of grazing technique, soil conditions, species of pasture plants, and frequency of ploughing. Precise data as to how these differences affect the health of livestock are not available at present and a plea is made for close collaboration between agronomists, biochemists and veterinarians in studying these problems. Continuous grazing of a ley is probably more dangerous to the health of the livestock than continuous grazing of a permanent pasture. If that should be proved to be the case then the length of the resting period becomes of great importance and it may prove to be a more practicable proposition periodically to take a silage or hay crop from the pasture.

Careful studies of movements of sheep kept on large tracts of hill grazing and subjected to no restrictions showed that *Agrostis* spp. were used for almost 50% of the grazing days of the flock, although this type of pasture represented only about 5% of the total. Rougher areas were grazed in early morning, late evening and during wet weather. Night camps were never grazed, although they were much improved by the great quantities of urine and dung passed on to them. At least 15–20% of each walk should be improved by manuring and reseeding, and such areas should be scattered over varying aspects of the hills to avoid burial in snow drifts of large numbers of sheep during blizzards. Sheep need a varied diet and folded sheep suffer from monotony of food.

HOSIER described his methods of farming developed over a period of 20 years. His system is based on rotation of all crops, including grass, and of all classes of livestock, including poultry. Many stock diseases can be avoided by rotation of stock, crops and grass and by keeping stock in the open air. By the use of portable milking bails, portable poultry arks and portable pig huts this

is possible. He had found that his " open-air dairying " system had reduced very markedly the incidence of disease, especially of TB.

Temporary leys cannot be properly utilized for dairy cattle until all fields are fenced and have a piped water supply. Ponds must be fenced off to prevent fouling of the water. H. considers that progress in elimination of disease will not be made without greater co-operation between stock owners and veterinarians.

TAYLOR discussed the relationship between overcrowding of livestock on pasture and the incidence of disease caused by helminth parasites. It was necessary to define " overcrowding " and to understand how it differed from " crowding ". The rate of infection of a pasture with helminth parasites may be said to increase as the square of the number of animals per unit area, but such a conception ignores the amount of herbage which grows on the unit area. A more significant figure than the number of larval worms per unit area is the number per pound of herbage which the grazing animal eats. When the herbage grows abundantly the number of larvae may be "diluted" by the quantity of herbage. At the same time the resistance of the grazing animal is increased by the abundance and quality of the ration furnished by the herbage. T. suggested that " overcrowding " is a matter of extent of infestation per unit of nutrition or, more concisely, of numbers of larvae per calorie.

SMYTHE associated a high incidence of metabolic disorders such as hypomagnesaemia and hypocalcaemia in dairy cows with grazing on luxuriant herbage, especially when the grass is grown on land depleted of its mineral constituents and manured with nitrogenous fertilizers. In his experience such an association is particularly noticeable in the case of Guernsey cattle. He opposed the ploughing of good-quality permanent pasture. His greatest objection to permanent pastures for dairy stock was the inevitable depletion of the phosphorus and calcium contents of the soil unless these were replaced by dressing with suitable fertilizers. In the case of poor-quality grazing he considered that temporary leys are justified but suggested they should be utilized by beef cattle, young stock and sheep rather than by dairy cattle. Such poor-quality pastures can be improved by the use of pig manure. S. considered that it is too early yet to assess the effect of ley-farming on animal health, but an increase in digestive disturbances and tympanites had been observed and he was doubtful of its wisdom as a long-term policy.

G. H. WOOLDRIDGE suggested a three-year rotation for sheep grazing : (1) grazed by yearlings and lambs, (2) grazed by adults, and (3) free from sheep.

GORDON considered that lamb dysentery in Scottish hill flocks is due to the practice of confining the lambing ewes for a period of three weeks to a small enclosed area near the farmhouse, thus concentrating infection. The short ley system of farming had been established and was beginning to be extensively adopted in the North East of Scotland as far back as 1911. It was about that time that " grass-sickness " in horses made its appearance. It might be that the reaction caused by transferring horses from a diet of dry food to uncontrolled grazing on luscious pasture was important in causation of this disorder.

MONTGOMERIE thought veterinarians could best help ley farmers by providing cattle free from diseases such as TB. and contagious abortion to graze improved pastures. The *Clostridium* group of organisms would probably always be present in the soil, however long it were rested. Rather than improve patches on upland grazings which were already adequate for summer months, it might be better to reseed winter pastures in order to provide hay in summer and increase keep during the winter.

J. T. EDWARDS applauded STAPLEDON'S emphasis on the psychology of dietetics.

S. J. EDWARDS presented evidence to indicate that *Mycobacterium johnei* persisted in unoccupied pastures for at least six months. SMYTHE considered the survival time is not less than one year.

—G. B. S. HEATH.

See also absts. **946** (mouldy fodder), **983** (sheep scab eradication), **1075** (pasture management and open-air dairying).

ZOOTECHNY

THOMSEN, K. G. (1941.) Om Paalideligheden af Draegtighedsprøverne hos Hoppen. [**Accuracy of pregnancy tests for mares.**]—*Maanedsskr. Dyrlaeger.* **53.** 237–259. **1076**

The Aschheim-Zondek, Friedmann-Schneider, Allen-Doisy and Cuboni reactions are discussed. By repetition of the A.Z. and F.S. reactions, T. reduced the percentage of uncertain results obtained by blood tests on 750 blood samples from 4·13 to 0·53. After contrasting the results obtained by these tests and the sensitivity of rats and rabbits as experimental animals, he concludes that the choice of method is less important than the retesting of doubtful cases. The period of pregnancy during which tests are made is important. Blood samples should be

taken in the 50–80 day period and urine samples after 120 or perhaps 110 days. The tests may give erroneous results in 2% of cases.—E. F. McC.

MINETT, F. C. (1943.) **Influence of climate on the incidence of disease.**—*Proc. 30th Indian Sci. Congr., 1943.* Pt. II. pp. 193–200. **1077**

M. emphasizes the importance of an experimental approach to the problem of disease and weather conditions, since the number of complicating factors may make statistical evaluation misleading. The experimental method may enable one to explain how epidemic diseases arise, to forecast epidemics, throw light on complaints, the causation of which is not fully elucidated, and to obtain clues as to the natural method of transmission of diseases of which little but the cause is known.

In a study of the influence of rainfall on animals M. used artificial showers under a variety of conditions. He found that sheep inoculated intramuscularly with very small doses of spores of *Clostridium chauvoei*, non-lethal to controls, died of the disease after exposure to a shower and that this resulted in some measure, from the lowering of the body temperature. On the other hand, warmth (40°C.) saved g. pigs from lethal effects : this was thought to be a phagocytic effect.

Climate is often responsible for nutritional disturbances in animals and facilitates parasitic infestation. In poultry, a hot atmosphere may lead to a diminished egg size. In conclusion M. refers to the control of diseases in India, contending that they will flourish as long as ignorance remains unchecked.—V. R. RAJAGOPALAN.

FRENCH, M. H. (1946.) **Notes on the hides and skins industry. Part I.**—*E. Afr. agric. J.* **11.** 238–246. **1078**

Hides and skins stand fifth or sixth on the list of goods exported from Kenya, Uganda and Tanganyika. The annual export value during 1936–44 averaged over half a million pounds. The value could be increased by reduction of damage to the hides and skins during flaying, cleaning and drying. This article discusses how such damage may be avoided.

Methods of flaying, drying, and storing hides and skins of cattle, sheep and goats are dealt with in detail. The important points are removal of the hide or skin as soon as possible after death using knives as little as possible, immediate scrubbing to eliminate blood, dirt and dung, removal of fat and flesh without delay, and trimming before drying. After these operations have been completed, the hides should be washed and suspended in frames in specially designed sheds, in the shade of a tree or vertically in the sun. They should be folded and sold as soon after drying as possible. When storage before sale is necessary, protection from rain or moisture, white ants, beetles and tineid moths is necessary. Dusting with naphthalene, derris or pyrethrum is advised.—M. C.

ANDREWS, J. O. (1946.) **Gadgets and improvisations.**—*J. R. Army vet. Cps.* **17.** 138–141. **1079**

Descriptions, illustrated by photographs, are given of an easy method of loading refractory mules, of how to prevent tail rubbing during transit in motor vehicles, and how to manufacture mangers from tar drums, of casting mules by means of shackles and of slinging horses in the open.—G. B. S. HEATH.

See also absts. **1095** (pig husbandry), **1096** (treatise on general zootechny).

TECHNIQUE AND APPARATUS

HAYWARD, N. J., & GRAY, J. A. B. (1946.) **Haemolysin tests for the rapid identification of *Cl. oedematiens* and *Cl. septicum*.**—*J. Path. Bact.* **58.** 11–20. **1080**

Colonies suspected of being *Cl. oedematiens* or *Cl. septicum* are grown overnight in tubes of Brewer's medium. These cultures are then tested for the presence of specific haemolysin by means of a simple test which, however, demands carefully selected antisera and specified conditions of hydrogen-ion concentration. The procedure is described for the selection of horse antisera sufficiently specific in their anti-haemolysin content. The use of Brewer's medium excludes the appearance of undesirable haemolysins. The use of 0·2 M sodium acetate buffer enables the test to be carried out at the optimum pH of 6·0. Human or rabbit red blood corpuscles are used as indicator. This is a practical and reliable time-saving test under field conditions.—J. KEPPIE.

PRIESTLY, F. W., & MEHDI, R. S. Z. (1944.) **The diagnosis of anthrax by the stevenel blue method of staining blood smears.**—*J. R. Army vet. Cps.* **15.** 91. [Reprinted in *Canad. J. comp. Med.* **9.** 54–55.] **1081**

The modified stevenel blue method comprises fixation in methylated spirit (or absolute alcohol) for ½–1 min., washing in water and immersion in stevenel blue for 5–6 sec., followed by washing, drying and examination.

Bacteria are sharply stained purple. Around them is a clear unstained area outlined by a thin purple stained line. Red blood cells are stained

green. In contrast with the polychrome methylene-blue method, the bacteria appear smaller and more sharply outlined and the capsule is more definite and even.—P. J. G. PLUMMER.

ROGERS, K. B. (1946.) **Oil sterilisation of syringes.**—*Lancet.* **251.** 87–88. **1082**

The need for a rapid sterilization of syringes used for injections is stressed. Sterilization by hot oil is recommended, five experiments demonstrating its success against different pathogenic organisms being described.

The syringe should be emptied of blood immediately after use and rinsed in water, no blood being allowed to dry. The needles should be removed and the syringes filled and emptied quickly 3–4 times with liquid paraffin at 130°–135°C. The needles should then be replaced and the empty syringe again filled and emptied. The advantage of this method is its speed; there is, moreover, no risk of haemolysis. Sometimes, especially with larger syringes, the pistons may jam after the aspiration of the oil, as the glass cools and contracts more rapidly than the metal plunger: within 5 min., however, the pistons move freely again.—D. S. RABAGLIATI.

See also abst. **951** (diagnosis of leptospirosis).

ORLEY, A. (1946.) **Automatic device for ascertaining ventricular enlargement.**—*Lancet.* **250.** 345–346. **1083**

In human medicine, abnormalities in the lumen of the cerebral ventricles can be detected by measuring the distances between certain specified points on X-ray plates obtained by a standard technique. O. describes how a length of elastic can be calibrated and used to detect cases in which the size of the ventricles falls outside the normal range.—J. KEPPIE.

MADERIOUS, W. E. (1946.) **A method for the aseptic bleeding of animals.**—*J. Amer. vet. med. Ass.* **108.** 324–325. **1084**

M. describes a method using a negative pressure tube. A test tube, containing anti-coagulant if necessary, is drawn out to a fine calibre and sealed, a rubber tube is attached to this and a hypodermic needle is attached to the rubber tube. The needle is inserted into the vein and the sealed end of the test tube is then broken by pressure on the rubber tubing.—A. H. HOGG.

MISCELLANEOUS

SPENCER, C. C. (1943.) **Notes on the life history of Rocky Mountain bighorn sheep in the Tarryall mountains of Colorado.**—*J. Mammal.* **24.** 1–11. **1085**

Observations of a flock of about 400 Rocky Mountain bighorn sheep, *Ovis canadensis canadensis*, near Pikes Peak, Colorado, were carried out by a team of naturalists over a period of four consecutive years ending in 1940. The ram is the most virile of the big game species, and the promiscuity of its breeding habits leads to serious battles, in which as many as 14 rams were observed to join. The ram moves from flock to flock during the breeding season and serves each ewe several times [cf. domestic rams]. The gestation period is about 180 days and lambing extended from May 16th to June 15th. Lambs follow the ewes from birth and graze with them by the time they are a month old. Food consists of sedges and clover, supplemented by such grasses as *Festuca* spp., *Deschampsia caespitosa*, *Kohleria cristata*, *Muhlenbergia montana*, *Calamagrostis canadensis*, *Trisetum spicatum* and *Poa pratensis*. Browse plants taken are *Populus tremuloides*, *Ribes inebrians*, *Jamesia americana*, *Rosa* spp., *Picea engelmannii* and *Salix glaucops*. Aspen and Engelmann spruce buds appear to be highly palatable.

The only ectoparasite observed was the winter tick, *Dermacentor albipictus*, and magpies were observed picking these from the sheep. Faeces showed the presence of coccidia, *Haemonchus* and *Ostertagia*, but no sick or ailing sheep were observed during the entire study.

—G. B. S. HEATH.

REPORTS

INDIA. (1945.) **Annual administration report of the Civil Veterinary Department, Sind, for the year 1943-44.** pp. 10. Karachi: Govt. Press. 8vo. **1086**

The report is presented in tabular form. The staff consisted of the Director, Disease Investigation Officer, Officer-in-Charge Goat Virus Station, three veterinary inspectors, 28 veterinary assistant surgeons and 11 compounders.

Table I gives figures of mortality from contagious diseases and other causes. Of the other diseases, HAEMORRHAGIC SEPTICAEMIA was the cause of most deaths among cattle and buffaloes. Among goats, CONTAGIOUS PLEURO-PNEUMONIA was the chief cause of mortality, there being 623 deaths against 732 in the previous year. There were no outbreaks of RINDERPEST. SURRA was absent among cattle but 82 equines died of it. Table II deals with preventive vaccinations. Over 3,000

bovines were protected against HAEMORRHAGIC SEPTICAEMIA using serum alone or serum and vaccine. Over 7,000 goats were vaccinated against CONTAGIOUS PLEURO-PNEUMONIA with a formolized lung tissue vaccine. 2,859 bovines were protected with goat vaccine against RINDERPEST. Table III gives details of animals treated and castrations performed at the 37 veterinary institutions. Over 50,000 animals of all species were attended and over 6,500 castrations performed, apart from those treated and castrated in villages by touring surgeons.

170 approved stud bulls, five male buffaloes and five stallions were maintained. 4,653 cows, 532 buffaloes and 112 mares were served by these stud animals. There are 15 slaughter houses for cattle and buffaloes and 28 for sheep and goats maintained by local bodies. In these slaughter houses, 18,944 cattle and buffaloes, 90,985 sheep and 364,620 goats were slaughtered during the year.

The total cost of the department was Rs. 1,90,481 as against Rs. 1,83,262 the previous year.—M. K. SRINAVASAN.

I. ITALIAN SOMALILAND. (1944.) **British Military Administration. Annual report of the Veterinary Officer for the year 1943.** [TREMLETT, J. D.] pp. 8. Somalia: Office of the Veterinary Officer. 4to. Typescript. **1087**

II. ITALIAN SOMALILAND. (1945.) **British Military Administration. Report of the Veterinary Officer for the year 1944.** [TREMLETT, J. D.] pp. 5. Mogadishu: Veterinary Officer. 4to. Typescript. **1088**

III. ITALIAN SOMALILAND. (1945.) **British Military Administration. Report of the Veterinary Superviser & Actg. Controller of Agriculture for the year 1945.** [TREMLETT, J. D.] pp. 8. Items of veterinary interest pp. 4–6. Somalia: Office of the Veterinary Superviser & A/Controller of Agriculture. 4to. Typescript. **1089**

I, After two abnormally good years from the pastoral point of view conditions reverted to normal, with stock near water-holes and cattle purchased by the livestock control board in fair condition, but deaths from starvation occurring elsewhere. TRYPANOSOMIASIS in cattle also increased as a result of the late rains which kept the animals in the neighbourhood of the rivers for an unduly long period. TRYPANOSOMIASIS OF CAMELS (SURRA) was also common and was treated with antrypol with considerable success. PLEURO-PNEUMONIA was on the increase and glycerinized field lymph inoculations were given when requested. RINDERPEST increased as the immunity given by the Italian inoculations died out and conditions allowed only cattle purchased by the control board to be inoculated. At first these were given serum and virus, but later goat virus from Kabete was used.

Five pedigree boars were imported from Kenya and were likely to improve the quality of the stock on the Italian-owned piggeries. Some 4,000 heifers were sold to Kenya for breeding purposes.

II. A case of TUBERCULOSIS in a camel was reported. There was abnormal mortality from TRYPANOSOMIASIS in some areas and tartar emetic, the only drug available, was used. There were many demands from camel-owners for antrypol, but supplies were restricted until 2,400 doses were made available. FOWL POX was the cause of considerable mortality and vaccine was procured from Kenya. The incidence of RINDERPEST was below average; no systematic programme of immunization was undertaken until late in the year.

III. SURRA in camels was still common and 4,500 were treated with antrypol. 1,000 birds were inoculated against FOWL POX. Over 20,000 head of cattle were inoculated against RINDERPEST and it was hoped that the disease would thereby be held in check. The horses belonging to the Gendarmerie M. I. Company were immunized against HORSE SICKNESS. *Cysticercus* and *Echinococcus* infections of cattle and camels were widespread.—R. MACGREGOR.

URUGUAY. (1945.) Direccion de Ganaderia. Memoria anual—1944. [**Annual report of the Livestock Division, Uruguay, for 1944.**]—*Bol. mens. Direcc. Ganad., Montevideo.* **28.** 2–7. **1090**

FOOT AND MOUTH DISEASE in a malignant form caused considerable losses, but was brought under control in February. It is intended to establish a research station dealing especially with this disease. 4,009 breeding cattle and 109 breeding pigs were imported from the Argentine to replace losses from this disease and from drought. SWINE FEVER reappeared in breeding stations in the capital and 1,288 pigs were treated with serum imported from the Argentine and 2,165 received crystal-violet vaccine made locally. There were no signs that SHEEP SCAB was being brought under control, owing to the lack of co-operation between farmers and Government, but a committee formed of officials of the Livestock Division, representatives of Rural Institutions and outlying ranchers was hoped to improve matters. The South Zone had been nearly freed of ticks and it was hoped to start work on the North Zone soon. ANTHRAX vaccine and BLACKLEG vaccine were sold in increasing amounts; also vaccines and sera for pasteurellosis of sheep, BOVINE BRUCELLOSIS, CEREBRO-SPINAL MENINGITIS of horses, and STRANGLES. 19 establishments were isolated because of ANTHRAX, as against 42 the previous year, but as there were 111 cases of

MALIGNANT PUSTULE in human beings, it was feared that many cases of ANTHRAX in animals were concealed.—R. MACGREGOR.

KAPLAN, M. M. (1946.) **The veterinary status of Greece and UNRRA aid in 1945.**—*J. Amer. vet. med. Ass.* **109.** 25–34. **1091**

Serious loss of livestock during the German occupation necessitated the importation of large numbers of animals by the UNRRA organization in an endeavour to restore the predominantly agricultural economy of Greece.

There are 160 qualified veterinarians. One hundred of these are employed by the Greek Ministry of Agriculture, 36 are in the Greek Army, and 11 are employed on food inspection. The Civil Government employees are allowed to practise privately. Only 75 of the 100 veterinarians employed by the Ministry of Agriculture are field officers: the others are engaged in administrative or laboratory duties. All Greek veterinarians have been trained in foreign veterinary schools, mostly in France or Belgium.

The regional veterinarians are mainly concerned with control of epizootics by means of inoculations and the inspection of meat in the region.

The numbers of livestock are given as approximately 578,000 cattle, 47,000 buffaloes, 5,827,000 sheep, 2,868,000 goats, 199,000 horses, 91,000 mules, 376,000 pigs and 8,290,000 poultry.

UNRRA imported numbers of animals including 8,000 mules and 2,400 donkeys as work animals. Breeding stock from the U.S.A. included 2,415 mares, 26 bulls and 553 heifers.

Food sanitation services are very unsatisfactory and in need of more trained staff and better organization.

UNRRA supplied drugs and equipment to all State-employed veterinarians and private practitioners. In addition, periodic communications in Greek were sent to all veterinarians to keep them informed of advances in veterinary science since the war commenced. Frequent refresher courses for veterinarians are organized. A Ministry of Agriculture plan for establishing a veterinary school is being encouraged by UNRRA.

The Veterinary Microbiological Institute in Athens maintained a diagnostic service and produced vaccines and sera to a limited extent. The Institute was under-staffed, equipment was worn out and insufficient in quantity. The supply of electricity and water was also unreliable. UNRRA helped with the supply of material and equipment. Two of the staff were being sent to England and the U.S.A. to study technical advances in bacteriology, pathology, parasitology and the production of biological preparations.

Disease statistics available were not very reliable. CONTAGIOUS AGALACTIA was prevalent. ANTHRAX was enzootic. UNRRA imported by air half a million doses of spore vaccine from Kabete Laboratory, Kenya Colony, and this proved effective. It was intended to use an intradermic spore vaccine, which was to be produced locally. Between 40% and 50% of the animals slaughtered in Athens and Salonika were found to be infected with TUBERCULOSIS. 2–3% of cattle from rural areas were infected. Plans for tuberculin testing were being applied. Large numbers of animals infected with GLANDERS were found among Greek Army equines used in the Albanian campaign. Sporadic cases occurred since then in Greece. Area mallein tests were being carried out. BRUCELLOSIS of goats and cattle occurred and a test survey was in progress. LAMB DYSENTERY due to *Clostridium welchii* Type B occurred sporadically and often caused high mortality in individual herds. Antiserum was used by farmers on farms where losses had occurred. "STRUCK" in sheep due to *Clostridium welchii* Type C was treated by a locally produced formolized bacterin used as a vaccine. In many districts BLACKLEG is enzootic. A formolized culture was used as a vaccine. Greece was a recognized centre of DOURINE infection prior to 1938. Tick-borne diseases have always been prevalent, especially PIROPLASMOSIS of horses (*Babesia caballi* and *Nuttallia equi*) and of cattle (*B. bigemina*). Persistent outbreaks of FOOT AND MOUTH DISEASE occurred in Thrace. Mortality was low. Sporadic outbreaks of RABIES occurred in all parts of Greece. UNRRA imported Habel mouse-tested rabies vaccine to supplement the small amount produced locally. SHEEP POX was said to cause 100% mortality in the Thrace-Macedonia region. An effective vaccine, consisting of the virus slightly attenuated by treatment with gentian violet, was used. Adequate refrigeration was necessary to preserve the virus. UNRRA used air transport to deliver the vaccine to veterinarians. Outbreaks of SWINE FEVER were frequent and often complicated by SALMONELLOSIS. Crystal violet vaccine was being imported for use against SWINE FEVER. Outbreaks of MANGE in sheep are very prevalent. Treatment by hand dressings is used in preference to dipping. Enormous loss of edible meat was due to ECHINOCOCCOSIS, with cysts in the liver and lungs of ruminants. Infection is also common among human beings. *Haemonchus contortus* in sheep and goats was very prevalent as was *Hypoderma bovis* infestation of bovines. DISTOMIASIS affected 30% of all ruminants. Carbon tetrachloride capsules were used with success against *Fasciola hepatica*, but

the lancet fluke, *Dicrocoelium lanceolatum*, resisted this drug. Sterility in cattle as a result of TRICHOMONIASIS and GRANULAR VAGINITIS is spread by infected communal bulls. Poor nutrition also contributes. Clinical evidence of AVITAMINOSIS appeared very early in the winter. Fowl diseases mentioned include FOWL DIPHTHERIA, FOWL CHOLERA, SPIROCHAETOSIS, NEWCASTLE DISEASE and FOWL PLAGUE. There were heavy losses.

—J. A. GRIFFITHS.

BOOK REVIEWS

—. (1943.) Festschrift Prof. Dr. Oskar Bürgi zu seinem siebzigsten Geburtstag. [**Tribute to Prof. Oskar Burgi on his 70th birthday.**] [Edited by AMMAN, K.] pp. 399. Numerous figs. Horgen-Zürich: Fritz Frei. 8vo. [In German.] **1092**

This book, produced in honour of Professor OSKAR BÜRGI on the occasion of his 70th birthday, contains contributions covering a great range of subjects by a number of specialists. The laboratory worker will find much of interest in the papers dealing with such subjects as Teschin disease, the conduction of impulses in the heart, the tuberculin reaction, etc. The eight papers dealing with surgery, therapy and diagnosis are of special interest to the practitioner and accounts of disease control and of the Swiss Army Veterinary Service will interest the administrator. There are three papers concerned with the subject of animal psychology and behaviour and one dealing with the ventilation of byres. Professor Bürgi's work as an administrator is described in a 20-page article.

The printing and format of the book are excellent.—M. C.

I. DUBOIS, G. (1941.) Expérience sur l'utilisation de l'urée et du bicarbonate d'ammoniaque dans l'alimentation des vaches laitières. Effectuée avec la collaboration et sous le contrôle des services de l'élevage du département de l'agriculture et du ravitaillement. [**Utilization of urea and ammonium bicarbonate in the feeding of dairy cows.**] pp. 121. Brussels: Station d'essais de la S.P.R.L. "Aliments Protector". 8vo. **1093**

II. DUBOIS, G. (1941–1942.) Compte-rendu des expériences sur l'utilisation d'azote d'origine synthétique dans l'alimentation des vaches. Effectuées avec la collaboration et sous le contrôle des services de l'élevage du département de l'agriculture et du ravitaillement. [**Utilization of synthetic nitrogen compounds in the feeding of dairy cattle.**] pp. 138. Brussels: Station d'essais de la S.P.R.L. "Aliments Protector". 8vo. **1094**

I. During the war, Belgium was very short of protein foods for cattle and every effort was made to investigate methods by which the deficiencies could be made good. The author gives a detailed account of investigations carried out to determine the extent to which synthetically produced chemicals containing nitrogen, such as urea and ammonium bicarbonate, could be utilized by the milking cows and the effects of such compounds upon milk production and composition and the live weight and health of the animals.

The main conclusions of the work were as follows:–

The use of urea and ammonium bicarbonate in an otherwise adequate diet had no adverse effect on normal live weight maintenance or increase. Their use as a source of nitrogen in the rations of milking cows led to a more rapid decrease in milk yield than with normal rations; and the replacement of urea in the ration of foodstuffs rich in protein confirmed that the diminution of yield was actually due to the use of the synthetic nitrogenous products. In the case of animals fed ammonium bicarbonate it appeared that the lowered milk yield was not entirely due to the use of this substance, but was partly caused by the advanced stage of lactation of certain cows in this particular group.

Synthetic nitrogenous products had no adverse effect on the fat content of the milk, or on its general quality, or on the quality of butter made from the milk.

The use of ammonium bicarbonate had no noxious effects either upon the digestive-tract or on the subsequent quality of the carcass.

It is emphasized that these results were strictly applicable only to animals maintained on a diet adequate in such other factors as vitamins, minerals and essential amino acids and that simple synthetic nitrogenous products can only be used to their maximum effect when the diet is adequate in all other respects. An appendix is given on the role of amino acids in animal nutrition and in particular, on the need for lysine in the rations of milking cows.

II. DUBOIS continued his investigations on the substitution of synthetic nitrogenous compounds for crude protein in the rations of dairy cows and this volume gives his further reports. His first experiments concerned the long-term feeding of urea and ammonium bicarbonate to cattle stall-fed throughout a period of 11 months. In the period before calving the use of the synthetic nitrogenous sources had no adverse effects

upon appetite, lactation, fat content of milk, live weight, state of health, gestation or calving. In the post-parturient period ammonium bicarbonate produced a better milk yield than with the first lactation and no stimulating effect on milk yield attended the return to normal diets and grazing. With urea feeding, however, the second lactation was not so favourable; milk yields rose slowly after a very poor beginning and restoration of the animals to normal grazing brought about a stimulating effect on milk yield. The " coefficient of utilization " of the nitrogen as ammonium bicarbonate was considerably higher than that as urea. Experiments with under-nourished cows showed that when the nitrogen intake was improved by additions of urea to the diet the first response was an increase in live weight rather than an increase in milk production.

Further experiments were carried out using ammonium chloride instead of ammonium bicarbonate as a substitute for crude protein in the food. Again, no adverse effects were in evidence either in the animal or on the quality of the milk. Moreover, it appeared possible to interchange urea, ammonium bicarbonate and ammonium chloride as protein nitrogen substitutes without any untoward effects.

The scientific reader may be rather surprised at the high " coefficient of practical utilization " of the synthetic nitrogenous products supplied, in view of what is generally accepted by others who have worked in this field, but since there are some obvious fallacies in the method of calculation of these coefficients, admitted by the author, the abstractor has felt it safer to refrain from quoting them. Readers should, therefore, bear in mind that the high coefficients quoted for the efficiency of utilization of synthetic sources of nitrogen in these dietaries should be accepted only in the light of the particular method of calculation employed.

The need for experiments of the type described was essential in face of the severe deficiencies experienced in Belgium during the war, and the work presented in these two volumes makes an interesting and practical contribution to the furtherance of studies on the utilization of synthetic sources of nitrogen by ruminants in general and by the lactating cow in particular.

—A. EDEN.

ANTHONY, D. J. [M.R.C.V.S., D.V.S.M. (Vict.), F.R.San.I.] (1946.) **Diseases of the pig and its husbandry.** pp. viii + 287. 53 figs. London: Baillière, Tindall & Cox. 2nd Edit. 8vo. 15s. **1095**

This second edition follows the lines of the first, with certain additions, such as a description of the Scandinavian type of piggery as modified for use in Great Britain. There are additions to the sections dealing with anthrax and swine fever, and new treatments are mentioned where these have become available.

The first eight chapters deal with breeds of pigs, market requirements, housing and management, feeding, dentition, health and restraint, scheduled diseases, non-scheduled infectious diseases and deficiency diseases. These eight chapters cover the subject satisfactorily but could be improved by certain additions, as, for example, a description of the true Scandinavian piggery for comparison with the British modifications and some mention of the Waldman system of rearing, farrowing crates, electric fencing and the use of nose rings. In discussion of the diagnosis of swine fever, the fact that pigs of all ages are affected might well have been stressed for its value in differential diagnosis. In the section on trypanosomiasis, *Trypanosoma simiae* is not mentioned and it is erroneously stated that nagana is a disease of man. The account of piglet influenza is somewhat marred by the opening statement that the symptoms are chiefly those of acute arthritis.

Chapters IX–XII could, with advantage, be rearranged in such a way as to make the information more readily accessible to the pathologist and to those dealing with the prevention and control of disease. Subjects of great practical importance such as diarrhoea and scours, metritis, mastitis, pneumonia, sunstroke, etc., are apt to be obscured by inclusion in chapters which deal with subjects such as active congestion, pneumothorax, splenic congestion and bradycardia.

Chapter XIII, on diseases caused by animal parasites, lists many parasites recorded from all parts of the world as affecting pigs. Some of these are of little practical importance, *e.g.*, *Ancylostoma duodenale*, *Necator americanus*, *Ollulanus tricuspis*, *Bourgelatia diducta*, *Globocephalus uro-subulatus*, and *Mecistocirrus digitatus*. Chapter XIV, on poisons and poisonous plants, deals with a great variety of substances which may cause poisoning. Water poisoning is given considerable prominence, although in actual practice it must be very rare. The section on anaphylactic shock requires revision: the tuberculin reaction is not a case of hyper-sensitivity to a non-protein substance.

In spite of some obvious defects the book is a useful one. For the next edition it might be advisable to confine the matter to diseases and parasites of pigs in Great Britain or, alternatively, to increase the size sufficiently to allow the exotic diseases and parasites to be covered in more detail.

—P. L. SHANKS.

JEAN-BLAIN, M. [Docteur Vétérinaire; Diplômé d'Etudes Supérieures de Physiologie; Agrégé des Ecoles Vétérinaires; Professeur de Zoo-

technie a l'Ecole Nationale Vétérinaire de Lyon]. (1945.) Traité de zootechnie générale. Tome I. Génétique generale. **[Treatise of general zootechny. Vol. I. General genetics.]** pp. xiv+175. 121 figs. Paris: Vigot Frères. 8vo. **1096**

It is proposed to publish this work in seven volumes, of which the present, dealing with genetics, is the first. The other volumes will cover sex and reproduction, nutrition, the influence of soil and climate and the production of milk, meat and wool. The volume under review presents a clear account of general genetics, dealing with mendelism, chromosomes, mutation, biometry, inheritance of acquired characters, the relation of heredity to disease conditions and telegony. There is a bibliography of some 400 references and an author and subject index. The text is well illustrated with photographs, charts and diagrams. The book is intended for veterinary students and is based on the views of the staff of the National Veterinary School at Lyons, the preface being written by the Director of the school. There is much in the book which is of interest to veterinarians and it is certain that it will be read with profit by graduates and students alike.

The references unfortunately lack page and volume numbers. The book has a paper cover and is printed on paper of varying whiteness and quality, an indication of the difficulties under which it has been produced.—E. G. WHITE.

BARTLETT, R. W. [Ph.D., Professor of Agricultural Economics, University of Illinois]. (1946.) **The milk industry. A comprehensive survey of production, distribution, and economic importance.** pp. xii+282. 33 figs. New York: Ronald Press Company. 8vo. $4.50. **1097**

This book contains nothing of purely veterinary interest until the last chapter, "Essential requirements for milk ordinances", prepared by DR. PRUCHA.

The book is in two parts: the first deals with "Freedom of enterprise and full employment" and the second with "Efficiency and per capita sales of milk". It is essentially a political review of the milk industry in the U.S.A., along with a minute examination of the costings in every phase of production, distribution and manufacture of milk products. Questions of wages, trade associations and labour unions are dealt with in great detail and a survey of the industry after the recent war is included.

It is pointed out that in 1939 the total milk produced in the U.S.A. was 109,600 million lb. and this increased to 121,200 million lb. in 1944, an increase of 11,600 million lb. As much of this milk went for war purposes, the following estimate is made as to how the surplus can be utilized in the years of peace:–

	Thousand million lb. of milk
Population increase, 1940–47: 900,000 at 806·5 lb. ...	5·9
Export of dairy cattle: 350,000 at 6,000 lb. per cow ...	2·1
Culled dairy cows: 900,000 at 4,000 lb. per cow	3·6
	11·6

In the final chapter an interesting account is given of the growth of official control from 1856 to 1946, and great stress is laid on the improvements brought about by the institution in 1893 of "certified milk", under the guidance of the Milk Commission of the Medical Society of Essex County, New Jersey.

It appears that in the U.S.A. the milk industry is hampered by regulations, for on page 258 we read that in 1939 FABIAN suggested that

> "Milk inspectors, through their health boards, should take steps at once to correct the intolerable condition of multiple inspections by different agencies, each requiring the milk producer to conform to their own requirements. After all, the fundamentals of dairy sanitation are simple and easy of application. The farmer and the public are not interested in the whims and personal differences of milk inspectors".

Again, on page 260 we are told that

> "overlapping city and state milk ordinances pertaining to the producing and handling of milk have caused much confusion which has resulted in the rejection of good quality milk, and the acceptance of inferior quality milk. According to Yates, some producers and processors are severely handicapped by a multiplicity of duplicated inspections. For example in one receiving plant with 350 producers, '26 different inspectors were required to keep their permits and licenses in force and that none of these inspectors would approve inspections of any of the others'".

It is well that our colleagues across the Atlantic are waking up to these difficulties, and while in this country, we may not be so "inspector ridden" it would be a good thing to realize that the same crippling conditions are experienced by some of our producers from an over-emphasis of petty details by different officials, often with too little practical experience.

The arguments put forward in this book are accompanied by a great wealth of figures and statistics quoted in their support, and the book is well illustrated by a large number of graphs and plans, all of which are illuminating.—D. S. R.

See also abstr. **1010** (minerals and vitamins in the nutrition of domestic animals), **1074** (farm buildings).

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